Appendix K

Department of Toxic Substances Control (DTSC)

RESPONSE TO COMMENTS

Lawrence Berkeley National Laboratory on Proposed Cleanup Remedies in the Corrective Measures Study Report and CEQA Negative Declaration

August 31, 2005

Department of Toxic Substances Control

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RESPONSE TO COMMENTS
LAWRENCE BERKELEY NATIONAL LABORATORY
ON
PROPOSED CLEANUP REMEDIES IN THE CORRECTIVE MEASURES STUDY REPORT AND CEQA NEGATIVE DECLARATION

BACKGROUND

The Department of Toxic Substances Control (DTSC) has prepared this document to respond to comments submitted by public during the pubic comment period and public hearing regarding the cleanup remedies as proposed by the Lawrence Berkeley National Laboratory (LBNL) in its Corrective Measures Study (CMS) Report. DTSC solicited public input in a 45-day public comment period that ran from April 25, 2005 to June 8, 2005. DTSC held a public workshop on May 26, 2005 from 6:30 to 9:00 pm at the North Berkeley Senior Citizens Center located at 1901 Hearst Street, Berkeley. During this workshop, DTSC staff made presentations to provide overview of the corrective action activities at LBNL. The contents of the CMS Report were reviewed and proposed remedies were discussed. Questions from the attendees were answered during this workshop. A public hearing was also held on May 26, 2005 from 8:00 to 9:00 pm to receive public testimony on the CMS Report and proposed remedies. The proceedings of the public hearing were recorded by a court reporter. This Response to Comment Document responds to all comments provided verbally or in writing during the public hearing and all other comments received during the public comment period. A review of all comments received indicated that there were several general issues raised by numerous commenters. DTSC has chosen to respond to these general issues at the beginning of this Response to Comments document and then in the specific comments and responses section of this document make a cross-reference back to these general issues where appropriate.

GENERAL COMMENT NO. 1 – PUBLIC OUTREACH

Several commenters stated that DTSC has not conducted adequate public outreach during the entire Corrective Action cleanup process at LBNL.

RESPONSE TO GENERAL COMMENT NO. 1

DTSC disagrees with this assertion. It is DTSC's opinion that it has conducted extensive public outreach activities since the beginning of Corrective Action investigations at this site. The following is a listing of specific public outreach activities conducted during each phase in chronological order from the Facility Investigation Phase to the most recent Corrective Measures Study Phase.

RCRA Facility Investigation (RFI) Phase

On November 15, 2000, DTSC issued a public notice of a 45-day public comment period on the availability of the RFI Report. A public workshop was held on December 6, 2000. The public was informed via a mailing of a fact sheet to 469 addresses. Approximately ten persons attended this workshop. At this workshop the attendees raised concerns about inadequate public outreach. These concerns consisted of: a) an advertisement was not placed in local newspapers; b) the names of certain commissioners from the City of Berkeley were not included on the mailing list; c) the proceedings of the

public workshop were not being recorded so that they could become part of the public record. At the December 6, 2000 public workshop, members of the public requested that additional outreach be conducted, the comment period be extended, and a public meeting be held with a court reporter in attendance. DTSC responded by extending the public comment period until February 15, 2001 and by holding a second public meeting on January 24, 2001. DTSC mailed fact sheets containing the announcement of the second public meeting to approximately 600 persons on a revised mailing list that included the addition of representatives of the City of Berkeley commissions. Display advertisements announcing the extended comment period and the second public meeting were placed in two local newspapers (the Oakland Tribune and the Berkeley Daily Planet). An announcement was also broadcast on a local radio station (KALX). Approximately eight members of the public attended the second public hearing, which was held on January 24, 2001. A court reporter recorded the proceedings. It should be noted that both federal and State public participation guidelines for this phase of the corrective action process call for preparation and mailing of a fact sheet to the facility mailing list. DTSC took additional steps of holding public meeting/workshops to provide additional information to public in person and to provide opportunities to discuss their concerns with DTSC staff and to submit comments. It should also be noted that in spite of the fact that DTSC implemented all of the expanded public outreach activities as requested by the limited number of attendees of the December 6, 2000 meeting, the attendees at the January 24, 2001 did not change. The primary parties submitting comments remained Mrs. Pamela Sihvola, Chair, Committee to Minimize Toxic Waste (CMTW) and Mr. L.A. Wood. In addition, based on their request form the December 6, 2000 meeting attendees, DTSC had invited representatives of Department of Energy (DOE) to explain their activities regarding cleanup of radionuclides at this site, California Regional Water Quality Control Board (CRWQCB), etc. We were not allowed to make presentations. It is noted DTSC cancelled the presentations it planned to make at this hearing at the request of the attendees and proceeded directly to accepting oral testimony.

In response to a request from one of the City of Berkeley Council members, DTSC representatives attended Berkeley's Community Environmental Advisory Commission (CEAC) meeting, February 1, 2001, to present the findings of the RFI and to describe future steps of the RCRA Correction Action Process. However, that presentation did not take place, due to commissioners' departures, resulting from concerns about the legality of a commission quorum.

Human Health and Ecological Risk Assessment Phase

In October 2003, DTSC updated the community on the status of cleanup activities at LBNL. Accordingly, DTSC held a public workshop on October 28, 2003. In this workshop DTSC presented the findings of the Human Health and Ecological Risk Assessments, which had been reviewed by DTSC's toxicologists. In addition, DTSC made a presentation to CEAC on these human and ecological risk assessments on. DTSC informed the community about this workshop via a fact sheet titled, "*Update on Environmental Analysis*" which was mailed to the mailing list. Also, display advertisements were placed in the Berkeley Daily Planet and Oakland Tribune newspapers.

Corrective Measures Study Report Phase

LBNL submitted the CMS Report to DTSC on July 1, 2004. DTSC informed the public of the receipt of the CMS Report in July 2004 by mailing copies of a Fact Sheet to the facility mailing list. The facility mailing list consists of approximately 2000 persons. DTSC also placed a display advertisement in the Berkeley Daily Planet and Oakland Tribune newspapers.

In July 2004, DTSC conducted a survey of the community in the vicinity of LBNL. Approximately 2000 survey letters were mailed. DTSC reviewed the responses from the community survey and prepared a

"DTSC Provides Responses to Community Questions" Fact Sheet. This Fact Sheet was posted on DTSC's internet website.

DTSC informed the public of a 45-day public comment period on the proposed cleanup remedies in the CMS Report on April 21, 2005. The public comment period ended on June 8, 2005. Display advertisements were placed in the Berkeley Daily Planet and Oakland Tribune newspapers. Copies of a Fact Sheet titled "DTSC Proposes Soil and Groundwater Cleanup at LBNL, April 2005"were mailed to the facility mailing list. A paid public notice announcing the public comment period, workshop, and public hearing was aired on an English language radio station. DTSC placed another display advertisement in local newspapers announcing notice of change of public hearing date, which was originally scheduled for May 24, 2005 to May 26, 2005.

DTSC held a public workshop and public hearing at 6:30 PM on May 26, 2005 at the North Berkeley Senior Citizens Center at 1901 Hearst Street, Berkeley. DTSC received oral testimony during the public hearing, which was recorded by a court reporter.

Additional Community Outreach Activities by LBNL:

In the fall of 1992, LBNL issued its first Community Relations Fact Sheet to help keep the community informed on the environmental restoration activities at LBNL. In July 1993, LBNL issued its Community Relations Plan (CRP). Interviews conducted with elected officials, environmental organizations, businesses, site neighbors, and LBNL employees formed the basis for the information contained in the CRP. LBNL prepared and distributed subsequent fact sheets in 1993, 1994, and 1995, updating the community on the progress of environmental restoration activities at LBNL. Since 1999 LBNL has made presentations to the City of Berkeley CEAC on a quarterly basis. These presentations were normally made prior to the normal start time of the CEAC meetings. The presentations were summaries of the same presentations made by LBNL to government regulators at its Site Restoration meetings which were held at LBNL's offices. DTSC representatives also attended the public meetings and were available during question and answer periods.

Reference Fact Sheets Cited in the above Response to General Comment No. 1:

The reader is referred to the following Fact Sheets for specific details of public outreach conducted for each phase of investigation at LBNL.

- Fact Sheet, RCRA Facility Investigation Final Report, November 2000
- Fact Sheet, RCRA Facility Investigation, January 2001
- Fact Sheet, *Update on Environmental Analysis* covered human and ecological risk assessment, October 2003
- Fact Sheet, *DTSC Provides Responses to Community Questions,* July 2004
- Fact Sheet, *Draft Permit Available for Comments*, September 2004
- Fact Sheet, *DTSC Proposes Soil and Groundwater Cleanup at LBNL*, April 2005

GENERAL COMMENT NO. 2 – RADIONUCLIDES CONTAMINATION

Several commenters raised concerns that DTSC did not address radionuclide contamination at LBNL.

RESPONSE TO GENERAL COMMENT NO. 2

DTSC would like to clarify that assessment and cleanup of radionuclides releases at LBNL are not subject to RCRA Corrective Action investigation. Those areas where radionuclides were potentially released

were identified by LBNL in their Facility Assessment of the site as part of the U.S. Department of Energy (DOE), Site Restoration Program in 1992 (LBNL, 1992). The authority in law relating to the regulation of radioactive materials was established under the U.S. Atomic Energy Act of 1954. This authority is delegated to the DOE, U.S. Department of Defense, and the Nuclear Regulatory Commission. The California Department of Toxic Substances Control has not been delegated this authority.

The following summary is provided by the DOE of their investigations regarding radionuclides at LBNL.

"The DOE completed the investigation of the eight units identified in their facility assessment and determined that no further action is required at any of these units. The results of the investigation were presented in the Summary of Radionuclides Investigations (September 2003). For seven of the eight units, it was determined that either 1) no release had occurred or 2) the levels of radionuclides found in the soil and groundwater were within LBNL background levels or for soil, less than the Preliminary Remediation Goals established by the United States Environmental Protection Agency, Region IX. A human health risk assessment was completed in 1997 for the eighth unit, the former National Tritium Labeling Facility (SWMU 3-7). In addition, an ecological risk assessment was completed for radionuclides. The ecological risk assessment concluded that exposure to radionuclides in environmental media at LBNL does not present a significant risk to ecological receptors. Both risk assessments overestimated the potential risk from tritium, since the estimates were based on the assumption that the NTLF would continue to operate and emit tritium to the air over a lifetime of exposure. However, the NTLF stopped operations more than three years ago, so tritium emissions have decreased significantly and will ultimately be eliminated. Furthermore tritium levels present in the environmental media are expected to decline over time due to its natural decay. This is confirmed by the declining levels of tritium detected in groundwater, with concentrations in all monitoring wells currently below the drinking water standard. Based on the results of the risk assessments and the declining levels of tritium in the environment, DOE determined that no additional investigation or remedial actions are warranted for the former NTLF unit, or are required under applicable regulations or policies. Nevertheless, DOE will continue to monitor groundwater and surface water to ensure that current conditions are maintained or improved.

The Summary of Radionuclides Investigations report has been available for public review at the LBNL environmental restoration program repositories located at the City of Berkeley's Main Public Library and the LBNL library since August 2003. Alternately the report is also available on-line at http://www.lbl.gov/ehs/erp/html/documents.shtml. A status update on the findings of the investigation was presented by DOE at the RFI public meeting conducted on January 24, 2001. The final results were presented at the City of Berkeley's Community Environmental Advisory Commission meeting on August 7, 2003."

Also a commenter has implied that the groundwater in-place in the vicinity of the National Tritium Labeling Facility (NTLF) is considered a "mixed waste". The groundwater near the former NTLF is not a "mixed waste" for the following reasons. First, groundwater cannot be considered a "waste" until it is brought above ground. Second, even if the groundwater is brought above ground, it could not be classified as a "mixed waste" since concentrations of VOCs are below levels that would characterize the water as hazardous. Again, for clarification, under the RCRA Corrective Action Program, DTSC does not have regulatory authority for the investigation/remediation of contaminated media with radionuclides. That responsibility is delegated to the DOE.

References

LBNL, 1992. RCRA Facility Assessment at the Lawrence Berkeley Laboratory, Environmental Restoration Program, September 30, 1992.

GENERAL COMMENT NO. 3 – REQUEST FOR A COMMUNITY ADVISORY GROUP

Several commenters requested that DTSC should sponsor a Community Advisory Group regarding the implementation and monitoring phases of remediation measures at LBNL.

RESPONSE TO GENERAL COMMENT NO. 3

The oversight of cleanup at LBNL is being conducted under the authority of California Health and Safety Code, Chapter 6.5, the federal Resource Conservation and Recovery Act (RCRA) and accompanying state and federal regulations. A Community Advisory Group (CAG) is a specific entity that is not legally provided for in these laws for oversight of corrective measures implementation. In another chapter of the Health and Safety Code (Chapter 6.8), there is a provision for establishing a Community Advisory Group (CAG) for response actions for state superfund cleanups. The LBNL corrective measures are not subject to that chapter or process. Chapter 6.5 already has a well defined public outreach process for decisions made under the provisions of this Chapter. As discussed under Response to General Comment No. 1, DTSC has followed a very open and inclusive public outreach process for the site assessment and proposed remedy selection activities at the LBNL site. DTSC is committed to implementing corrective measures in a fully transparent manner and allowing the City of Berkeley and the community meaningful input to the process. We will make all reports and monitoring results available for public review. In response to a resolution on this subject adopted by the City Council of the City of Berkeley, the City Manager has recommended that DTSC use the Community Environmental Advisory Commission (CEAC) as the venue through which to distribute this monitoring information and to receive public input. DTSC plans to work with CEAC to exchange this information.

It should also be noted that DTSC has also provided reports and other information to the Committee to Minimize Toxic Waste giving it recognition as a community group. DTSC will continue its coordination with CEAC and CMTW during the corrective measures implementation phase at the LBNL.

RESPONSES TO SPECIFIC COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD

COMMENTER #1: Ms. Leuren Moret

MS. MORET: My name is Leuren Moret. I worked five years at the Lawrence Berkeley Laboratory, two years at the Lawrence Livermore Laboratory. I'm a nuclear weapons lab whistleblower. I blew the whistle on the Yucca Mountain Project and the Superfund Project at Livermore. I'm a geoscientist and I worked on the groundwater cleanup at Livermore, and I'm now an international expert on radiation as a result of blowing the whistle, having a Karen Silkwood experience, and I survived it.

COMMENT 1-1

I would just like to make a comment about the date that was set for this public hearing, the first one that we've had, and to ask why this was scheduled on a busy holiday weekend. This is not the first time this has happened in public process it seems to be a pattern. And I think this is unfair to the community and people who wanted to be here and could not.

RESPONSE 1-1

DTSC had initially planned to hold the public hearing on Tuesday, May 24, 2005, but the date was changed to Thursday, May 26, 2005 at the request of community members. Please note that we have been selecting our community workshop or public hearing dates after consultation with Committee to Minimize Toxic Waste (Pamela Sihvola et al) and the City of Berkeley.

COMMENT 1-2

I'm going to address the regulatory standard and the risk model now for chemical and radiation exposure. In 1989, I interviewed Calvin Willhite, I'm sure he does not remember me. I asked him what the EPA chemical exposure limits were based on, and he said, well, we couldn't do experiments on humans to determine the risk and we couldn't afford to do experiments on animals, animal studies, to determine the risk, so we made them up. So the chemical risk standards for the EPA and the US government are made up. They are not based on science.

RESPONSE 1-2

Quantitative health risk assessment uses animal (primarily rodent) and human (primarily occupational) exposure-response data to estimate both non-cancer and cancer toxicity factors. Due to the relative paucity of reliable and robust human data, the majority of non-cancer and cancer risk assessments may rely upon the results of long-term mouse and rat bioassays. Using standardized statistical methods, inter- and intra-species uncertainty factors (historically called 'safety' factors) are used to extrapolate rodent data to the human and calculate a reference dose. Using an assumed (primarily linear) model, rodent and/or human carcinogenicity data are fit to an assumed dose-response relationship to calculate an upper bound potency value (usually referenced as q1*). Potency values are published by both the U.S. EPA and the California Office of Environmental Health Hazard Assessment (OEHHA). Potency values are often highly controversial; in fact, the potency estimate for trichloroethylene (TCE) found in LBNL groundwater is currently under review by the U.S. National Academy of Sciences (www.nas.edu). Since potency values are based on the mode of action and dose-response assumptions and the interspecies scaling is often based only on body surface relationships, potency values are theoretical estimates. Thus, combining hypothetical populations, estimated frequency and duration of exposure taken together with theoretical potency values lead to abstract results. Nonetheless, the various assumptions in each of the regulatory health risk assessments combine to over-estimate health risk. The conservative assumptions

and theoretical nature of regulatory health risk estimates derived using current U.S. EPA procedures that are followed by DTSC are specifically addressed in the LBNL Baseline Human Health Risk Assessment.

LBNL has completed both an Ecological Risk Assessment (ERA) and a Human Health Risk Assessment (HHRA) in accordance with our approved workplans. The HHRA determined that 15 units should be further evaluated in the CMS Report.

The ERA evaluated the potential for chemical contaminants detected in soil, sediment, surface water, and groundwater to adversely affect the reproduction, growth, or survival of plant and wildlife individuals and populations. The ERA concluded that no adverse impacts exist for ecological receptors from exposure to chemicals in soil, groundwater, or surface waters at LBNL.

The HHRA estimated risk to human health from potential exposures to chemicals in soil, groundwater, surface water, and air. The HHRA identified the current and reasonably likely land use at LBNL as industrial-type institutional land use. The potential receptors associated with this land use scenario are LBNL employees (laboratory workers, office workers, and outdoor workers such as landscape maintenance workers) and construction workers. Off-site receptors were not evaluated in the HHRA because there was no complete exposure pathways to these individuals and none are anticipated in the future. The HHRA also addressed protection of the beneficial uses of groundwater by comparing concentrations of chemicals of concern to drinking water standards.

In conclusion, DTSC disagrees with the comment that chemical risk standards are made up or that they not based on science. On the contrary, DTSC believes that the chemical risk standards considered at LBNL are based on sound science and there are several layers of safety factors built into these standards to be protective of human health and the environment.

The text of the HHRA is organized into eight sections. Section 2 provides a brief description of the history and operations of LBNL, as well as an overview of the physical setting and resource use plans that are important to characterizing current and reasonable future human exposure scenarios. Section 3 is an overview of the HHRA process, including a summary of the basis for the specific exposure assumptions. Sections 4 and 5 present the results of the risk assessment for the institutional and residential scenarios, respectively. The combined risks associated with exposure to Chemicals of Potential Concern (COPCs) in soil and groundwater are discussed in this section. Section 6 discusses the uncertainties associated with the HHRA. A summary of risk assessment findings and conclusions is presented in Section 7. Section 8 presents recommendations, and rationale for recommendations, pertaining to whether or not further remedial action requirements should be considered, and whether the units should be retained in the CMS. This information is provided within the HHRA as an aid in identifying, evaluating and ultimately selecting appropriate corrective action approaches for specific sites during the CMS process.

Appendices that contain supporting information for the HHRA follow the main body of text. Appendix A presents the risk calculations by exposure pathway for each receptor for the soil units. Appendix B presents the risk calculations for the groundwater pathways and maps showing the locations of LBNL groundwater monitoring wells. Appendix C provides revised risk estimates based on new EPA guidance that excludes cancer risk from 1,1-DCE. Appendix D presents the results of the soil to groundwater leaching evaluation. Appendix E presents the risk calculations for the surface water pathways. Appendix F contains the Analysis *of the Background Distribution of Inorganic Elements in Groundwater at LBNL*. Appendix G contains the *Indoor and Outdoor Air sampling Report for the LBNL*, the *Supplemental Indoor and Outdoor Air Sampling Report for the LBNL*, and results of the risk calculations based on the 1999 indoor air samples.

References

- Ecological Risk Assessment for Chemicals for Lawrence Berkeley National Laboratory, Environmental Restoration Program, December 2002
- Human Health Risk Assessment for the Lawrence Berkeley National Laboratory, Environmental Restoration Program, May 2003

COMMENT 1-3

The radiation standards which were conducted or they were based on the A-bomb study of Hiroshima and Nagasaki survivors were based on external gamma ray exposure and neutrons, there was no determination of internal exposure or even recognition of it. We were dealing with internal exposure. And the studies were fraudulently done because they threw out the first five years of data when most of the people died.

In fact, I have worked around the world with radiation experts from Russia working on Chernobyl and Japan and European countries. This is a European Parliament independent study, the regulator's edition, published in 2003, January 2003, on low-level radiation risk, and it determines that the A-bomb study which provided the data for the ICRP standard, International Committee on Radiation Protection, are mutually exclusive from a model, radiation risk model, which we then see in this study for the European Parliament based on internal exposure. And what they determined in this study is that internal exposure to low-level radiation risk is a hundred to a thousand times greater than the ICRP standard. So your radiation standard, they are based on the ICRP model. What you have not recognized is the synergistic effect of chemicals and radiation working together and that enhances the risk by at least ten times, maybe more, it depends on the chemicals and the radiation, and that low-level radiation also reduces the quality of life by ten percent. The superlinear effect of radiation and chemical exposure, this is exposure to very low levels of chemicals and radiation, has proven that low-level radiation and low-level chemical exposure for certain chemicals is actually many, many times more harmful per unit of radiation than higher levels. Now, I haven't heard any of these things mentioned by any of your experts. So having a Ph.D doesn't mean anything. Thank you.

RESPONSE 1-3

The LBNL Baseline Human Health Risk Assessment that was presented at the DTSC October 28, 2003 public workshop addressed the distinction between procedures utilized in quantitative radiation risk and quantitative chemical exposure risk. The differences between radiation risk analysis and non-radioactive chemical risk analysis are described in U.S. EPA (December 1989) Risk Assessment Guidance for Superfund Volume 1.Human Health Evaluation Manual (Part A).Interim Final. EPA/540/1-89/002.pp.10-1 to 10-37. U.S. EPA provides a guidance in Section 10.7.3 concerning combining radionuclide and chemical cancer risks posed by exposure to chlorinated solvents. It states that "… the two sets of risk estimates should be tabulated separately". DTSC review of procedures followed by LBNL authors found that those procedures were consistent with U.S. EPA guidance. Regarding the synergistic effect of chemicals and radionuclides, there is no scientific methodology to calculate these effects.

In addition, please see the Response to General Comment No. 2.

COMMENT 1-4

The drinking water standards, for example, for tritium is 1,000 picocuries per liter, means over a year that every cell in your body has the possible exposure of being exposed to tritium. That doesn't sound too safe to me. This is all part of the cold war mortgage. The Lawrence Berkeley Lab, the Livermore Lab, 10,500 sites in the United States, are contaminated with radiation and chemicals. And that's out of a

DOE publication. There are at least five national superfund sites that can never be cleaned up. LBNL is not one of them: The Nevada test site, Hanford, the Savannah and Clinch Rivers.

The 1995 cost to clean up the environmental legacy of the nuclear weapons program is $250 billion. It means that 2.3 million acres under DOE ownership and 120 million square feet of buildings are potentially contaminated. No wonder they don't want to do it, or they want to cut corners. But I'm here tonight to tell you you're not going to get away with not cleaning up LBNL now and then ask us to re-license LBNL to contaminate us more.

RESPONSE 1-4

Regarding the radionuclide tritium, please see Response to General Comment No. 2 which clarifies that the DOE is the lead agency for radionuclide cleanup.

COMMENT 1-5

We're in an active tectonic region there are active faults from the sea coast inland from the plate tectonics. You don't know when it's fractured, faulted you don't know where the micro faults are. You don't know anything about this environment because you sure haven't told us about them. And the risk of a major earthquake is one of the highest risks in the United States.

RESPONSE 1-5

The location of, and seismic risk associated with, active faults in the vicinity of LBNL and potential geologic hazards, including seismic hazards, are discussed in the RCRA Facility Investigation (RFI) Report dated September 2000, hereinafter referred to in this RTC document as RFI Report. The impact of faults and earthquake induced landsliding on the potential migration of contaminants at LBNL is discussed in response to several comments included in the RFI Report. It is understood that large magnitude earthquakes are predicted for the northern Hayward Fault, which lies at the western boundary of LBNL, and that significant ground-shaking could be expected to occur throughout the facility. The term “microfault” refers to microscopic geologic discontinuities in rocks. Since the magnitude of an earthquake is generally proportional to the size of the ruptured area of the fault, the presence of such microfaults would have no bearing on the seismic risk at LBNL. It is suspected that groundwater travels through rock units primarily via fractures, which would include microfractures. The presence of micro faults, which would have maximum displacements on the order of centimeters, would have no relation to major earthquakes. However, it is not necessary to know the precise locations of such small fractures, since the hydrogeologic properties of the fractured rock bodies as a whole may be determined by testing entire sections of these bodies using standard hydrogeologic well testing techniques. A discussion of the hydrogeologic testing conducted is provided in the RFI Report.

Reference

- RCRA Corrective Measures Study Report for Lawrence Berkeley National Laboratory, Environmental Restoration Program, February 2005

COMMENT 1-6

And you've come here to tell us you only want to clean up 20 percent. You want to leave 80 percent of the mess. It's not acceptable. We have to live here. You don't have to live here. Our children have to live here. There are people in this community who are sterile, they can never have children. You don't have the right, the government doesn't have the right to take our reproductive ability away from us. You don't have the right to kill and poison our children and our babies and the unborn. 1.3 billion people as a

result of a nuclear weapon and a nuclear power project have been killed, maimed, and diseased around the world. Because in seven days what you're releasing here into the air goes around the world. I'm an expert on atmospheric dust. You know, you're coming here to tell us you're going to clean it up, but it's a broken promise and it's been a broken process, and you need to listen to us.

RESPONSE 1-6

DTSC respectfully disagrees with statement that DTSC wants to leave behind 80 percent of the contamination. The cleanups specified in the CMS Report, and the Interim Corrective Measures (ICMs) completed to date, will remove most of the contaminant mass that has been present in both the soil and groundwater. Although it is not clear what the basis is for this assertion that DTSC wants to clean up only 20% is, however, we assume that it is based on the information presented on the figure included after Attachment 13 in the June 7, 2005 comments from the Committee to Minimize Toxic Waste (CMTW) on the Draft CMS Report. The figure, prepared by CMTW, shows areas highlighted in black that are interpreted to "indicate contamination plumes for which no cleanup is proposed" and areas in yellow interpreted to indicate areas where cleanup is proposed. This figure does not accurately portray the cleanup requirements for the site. Although DOE has no active cleanup plans for the Tritium Plume, which represents more than one third of the area highlighted in black, DOE has informed us that the plume is being cleaned up by natural attenuation processes. Concentrations of tritium in all wells monitoring the tritium plume are currently below the drinking water standard. Concentrations of tritium in most wells monitoring the plume are decreasing, and the lateral extent of the plume is shrinking. No cleanup is required in several other areas highlighted in black on the figure (Building 71 Freon Plume, Building 37 VOC Plume, Building 7 Diesel plume) because concentrations of all chemicals of concern are well below drinking water standards. Concentrations of VOCs in the Building 37 VOC Plume were reduced to levels below detection limits as a result of an ICM. Also, contrary to what is indicated on the figure, cleanup is proposed for most of the remaining areas highlighted in black. Although the required cleanup level is not the drinking water standard for all these areas, LBNL has indicated that there long-term goal is to restore all groundwater to drinking water standards, if practicable.

Regarding radioactivity, please also see Response to General Comment No. 2 for approval information.

COMMENT 1-7

And we need to have a Community Action Committee. Because if we don't, you're not going to do it, our corrupt city council is not going to do it, our infiltrated CEAC Commission is not going to do it. We are going to insist on a community action committee, and we hope that you will work with us.

RESPONSE 1-7

Please see Response to General Comment No. 3.

COMMENT 1-8

Now, it turns out your report and the DOE report, I'm going to point out, especially to the community, that Department of Energy report, and we have no authors, they have no peer review process, and the first thing to read when you open a DOE report is the disclaimer. They take no responsibility for anything in the report. And the one thing I learned at Livermore that I tell everyone and I will never forget is the day I was looking out the window of my laboratory and I said, my God, scientists are prostitutes for the military war preparations. I had the great fortune because of my whistleblowing experience to become a citizen scientist, and I hope that some of you when you retire will do that and come and help us, because our problems are your problems too. What's happening to us is happening to you.

RESPONSE 1-8

No disclaimer has been included in the CMS report submitted by LBNL to DTSC. All documents submitted to DTSC include the signature of the LBNL Environmental Restoration Program (ERP) Manager as the approver and/or his signature on the transmittal letter. In addition, reports that have been submitted since 2000 have been signed by and stamped with the seal of a California Professional Geologist, a California Certified Hydrogeologist, and/or a California certified Engineering Geologist. In addition, these reports have been reviewed by our DTSC staff, most of whom are registered engineers and geologists.

COMMENT 1-9

And even no health studies have been allowed. The State of California Department of Health wanted to do a health study in Livermore because children had leukemia and there's very high rate of cancer there. The funds were cut.

RESPONSE 1-9

Human Health (HHRA) and Ecological (ERA) Risk Assessments were prepared as part of this project. The ERA determined that that there are no negative effects to ecological receptors. Please see Response to Comment 1-2 for more details on the HHRA.

Regarding the cutting of funds for a health study at Lawrence Livermore National Laboratory in Livermore, this comment is not relevant to this project and therefore is just noted.

COMMENT 1-10

I don't know if the Water Quality Control Board is measuring radiation in our drinking water, but I can tell you that at the Livermore Lab is measuring radiation washing out of the Sierras, the bomb testing fallout, the Chernobyl fallout, the Rancho Seco fallout, it's all in the Sierras and it's washing right through our bay. And actually Livermore measured it all the way down to the tip of Baja. The Marin County breast cancer cluster is a result of that contamination washing up in the meth lab of the Marin coastline.

RESPONSE 1-10

Water Board staff reviews LBNL's groundwater monitoring program which includes radionuclides but is not directly involved with testing domestically supplied drinking water in Berkeley. The testing of domestically supplied drinking water is the responsibility of the supplier, which, for most all Berkeley, is the East Bay Municipal Utility District (EBMUD). As the supplier, EBMUD tests drinking water for radionuclides as well as numerous other analyses. In addition, the State of California, Department of Health Services (DHS) has a drinking water program. There are drinking water field operations branches with DHS that are responsible for the enforcement of the federal and California safe drinking water acts.

For purpose of public health epidemiologic investigations, Marin County results are tabulated separately from those of Alameda County. Thus, the Marin County data have no direct bearing on Alameda County data. Nevertheless, risk factors known to be associated with increased risk of breast cancer include family history, ethnic background, age, lifestyle (e.g., exercise) and body mass, dietary fat and ethanol consumption, child bearing history and use of prescription drugs (hormone replacement therapy). Please see Response to Comment 1-2.

COMMENT 1-11

So we need an oversight committee, the citizens need to be able to talk, they need to be able to know that you are listening. We need to have your answers to our comments. We have put a lot of time into research on this issue, many years, a great deal of effort, and in all due respect, you need to address our concerns. We need an oversight committee because this chemical and radiation exposure is in addition to the burden that is already in the San Francisco Bay Area. Because of the rain, the fog, the pollution, we have higher levels of exposure more is washed into our environment.

RESPONSE 1-11

Regarding an oversight committee, please see Response to General Comment Nos.1 and 3.

Regarding radiation exposure, please see Response to General Comment No. 2.

COMMENT 1-12

The risk is unknown and the standard, the regulatory standards are based on false premises. This is obvious from, for instance, problems that people getting organ donations, they suddenly have discovered that chemicals and radiation are being passed on to patients, organ donor patients. And it's a risk that they were unaware of before.

RESPONSE 1-12

The primary chemicals of concern at LBNL are the common dry cleaning solvent perchloroethylene (PCE), the related trichloroethylene (TCE) and products of their environmental decomposition by soil microbes (e.g., 1,1,-DCE, cis/trans-1,2-DCE). At the present time, there is no complete exposure pathway to any of these substances found in LBNL groundwater. Both PCE and TCE are lipophilic and tend to accumulate in body fat. The rate of human elimination from adipose tissue (biological half-life = 55 and 3.5-5 hours, respectively) has been measured in controlled clinical studies. Using these observations taken together with the hypothetical exposures assumed in the LBNL health risk assessment, it is not pharmacologically possible that chronic levels of these substances under current conditions at LBNL could accumulate in adipose or other tissues of people who live nearby or who work at LBNL.

Regarding radiation exposure, please see Response to General Comment No. 2.

For more information about human health and risk assessment, please see Response 1-2.

COMMENT 1-13

Climate variability will impact our water supply. We need to have a water supply here independent of the normal one. And potential x-rays on pregnant women of very low levels of radiation have a very serious impact on the fetus. In fact, they do permanent brain damage.

RESPONSE 1-13

Regarding a water supply independent of the normal one, that issue is beyond the scope of this CMS project.

Regarding radiation exposure, please see Response to General Comment No. 3.

COMMENT 1-14

So all these new studies and new information about the impact of low levels of radiation and chemicals have not been taken into consideration, and we want to be sure these concerns are addressed. And at this time, we're living in a time that is going to have an increasing negative impact on the environment because our economy requires it.

So I thank you very much for listening, and I'm very thankful to the citizens who came tonight, and I would like to thank our Council Member, Chris Worthington, for coming this evening.

RESPONSE 1-14

Regarding radiation and chemical exposure please see response to comments 1-3 and 1-4. Also, please refer to Response to General Comment No. 2.

COMMENTER #2: Mr. Tom Kelly

Good evening. My name is Tom Kelly. And the first thing I'd like to do is I'd really like to express my appreciation to all of the citizens of Berkeley who have really stuck with this issue over the last 10 or 12 years and doggedly so, and have done so with no compensation and at great personal expense and obviously taking great personal risks in a way to continue to go up against the Lab and what seems to me to be a very conflictual situation which of course all of us realize is not the way we like to lead our lives. So to these people I really want to say thank you very much, you've been very inspirational to me in terms of keeping me interested and following it up.

COMMENT 2-1

Up until just a couple of months ago, I worked at the California Department of Health Services in the Environmental Health Investigations Branch. And in some ways we're kind of a, I won't say a counterpart to DTSC, but they often work together. And one of the things that we have learned is that you need to get the community involved in these types of issues very, very early in the process, and you have to do that because that's the only way you're ever going to get a good outcome. Now, you can avoid doing that and all of us have seen and I'm sure the folks at DTSC recognize it too that when you develop a resolution with someone like the Lab, if the community gets involved in that late in the inning, you run the risk of whatever process you developed being undermined, and often taking you right back to where you started from. So with that in mind, I would also like to leave with you a copy of the letter that we at the Community Health Commission sent to the City Council, which essentially asks that the area that's being considered to be cleaned up to be the highest possible levels. And, you know, it makes sense. Think about it. I mean all of us when we were growing up, you know, we were told if you make a mess, clean it up. And essentially that is what the lab has done over the last 40 years. And I don't know if you can say that it's been due to its own negligence or even intentional.

I mean I don't understand how solvents and VOCs and PCBs and everything else actually get into our groundwater, the way they did here, unless someone wasn't paying attention or the best management practices at the time weren't being used. So with that in mind too, I hope you understand that that's some of the reasons why there's a great deal of distrust of the Lab and its motives and its willingness to follow through on the promises that they even make to DTSC.

RESPONSE 2-1

DTSC agrees with Mr. Kelly that the community should be involved at very early stages of these projects. Both LBNL and DTSC have involved the community from the very beginning of the process. The community involvement in this project started in February 1993. Please refer to Response to General Comment No. 1 for more details on the public outreach. The contamination documented in the CMS Report originated from spills and leaks that mostly occurred decades ago. Since that time, waste handling and management practices have considerably improved. In addition, there has been a significant increase in Federal, State, and local government oversight of waste handling and management practices as a result of legislation passed to address environmental concerns. It should be noted that the requirement that RCRA regulated facilities implement corrective action came into existence in 1984. This requirement included investigation and remediation of historical releases that could have occurred over the 60-year operational life of LBNL.

COMMENT 2-2

So the second thing that I want to ask is that you consider, well, actually recognize that you put together a citizens' advisory group, and I'm sure you could figure out a way to make that work. I mean other than this advisory group, it would be made up of people who would necessarily be there to undermine this effort, but I think it could be structured in such a way that everybody would get off to the right foot and actually came out with enough good will that they all agreed that they would work to try to get the best outcome possible.

So this is a tough situation. People in Berkeley haven't given up, unlike most of the rest of the people in this country, and they still continue to demand involvement in the process, we're active in this process, and that's what democracy is all about. And so you can encourage that and maybe even help to foster a rebirth in the rest of this country if you could look beyond all this past acrimony and distrust and let's get started on a new footing and see if we can't work together as a team that will ultimately provide a better result for everybody. So thank you very much, I appreciate it.

RESPONSE 2-2

DTSC is committed to a meaningful community involvement in its decisions. For this project, DTSC has been implementing a very robust and interactive community outreach. Please see the Response to General Comment No. 1 for more details. DTSC coordinates outreach activities with the Community Environmental Advisory Commission (CEAC), which is an appointed commission by the Berkeley City Council as well as the Committee to Minimize Toxic Waste.

DTSC reviewed the Draft Corrective Measures Study, under the regulatory authority of the California Health and Safety Code, Chapter 6.5, and the federal Resource Conservation and Recovery Act. As we have informed the City of Berkeley, a Community Advisory Group is a specific entity that is not legally provided for in corrective action law. There is a provision in another Chapter of Health and Safety Code (Chapter 6.8) for establishing a Community Advisory Group for response actions as part of the state superfund cleanup process.

However, in line with our policy and practice, DTSC remains fully committed to overseeing this corrective action in a fully transparent manner and allowing the City of Berkeley and its citizens meaningful input in the process. With this in mind and in response to the City of Berkeley's request, DTSC plans to regularly brief the City's Community Environmental Advisory Commission.

Please also see the Response to General Comment No. 3.

COMMENTER #3: Ms. Joan Levinson

COMMENT 3-1

My comment is that all of you who have come here tonight to tell us are clearly very smart, well-informed specialists in your field and you know what you're doing in the Lab and you know what you're talking about. And I suspect that all of you had an early impulse to get into this field because of 30 years ago and longer there was the idea that the environment is important and we should keep as much toxicity out of it as we can. And now 30 years later there is more than ever. So my comment is what do you do in your very quiet alone moments when you remember original motivations and what you are doing now sounds not a little like Orwell's 1984, and it's very, very troublesome, extremely troublesome to we who have come in great honestly and sincerity asking simple questions that affect our lives and your lives and everybody else and we hit the fog. In the context of that, I would like to give Nathan a copy of similar questions that were asked ten, nine years ago when you were applying for a permit to develop hazardous waste again, and yet nine years later it's all the same questions and the same nonanswers.

RESPONSE 3-1

Regarding the Class 2 permit modification for the Hazardous Waste Handling Facility which DTSC approved in 1997, it is DTSC's opinion and position that the Response to Comments document adequately addressed all the issues raised by the community. DTSC stands behind its decision to approve the Class 2 permit modification and the associated Response to Comments document. DTSC respectfully disagrees that our responses are "nonanswers". For example, DTSC has repeatedly stated that we do not have regulatory jurisdiction on radionuclides but some community members keep on raising the same issues again and again. So DTSC believes that it is being responsive to the community.

Regarding permit modification, DTSC held a public workshop and a hearing on the Permit Modification in 1997. DTSC received numerous comments. DTSC prepared Response to Comments document that addressed the issues raised during public comment period and public hearing.

Regarding permit renewal, DTSC public noticed receipt of Permit Renewal Application in November 2002. After its review DTSC announced a 45-day public comment period in the Berkeley Daily Planet and Oakland Tribune. A fact sheet was issued to inform the public about the Draft Permit at LBNL. A public hearing was held on October 20, 2004 and comments were received on the Draft Permit and the related California Environmental Quality Act Negative Declaration from September 21, 2004 to November 19, 2004. DTSC will prepare a Response to Comments (RTC) document.

COMMENT 3-2

My question is, and you can write to me and tell me, to your knowledge, is there anything being done at the moment to prevent this horrible contamination situation with ongoing and new projects that are being developed at the Lab? Thank you very much.

RESPONSE 3-2

The permitted operations have been reviewed and DTSC believes that the permitted facility is designed properly to prevent future contamination. Regarding contamination associated with ongoing and new projects, it is not clear to what the commenter is referring to. Lacking details on specific ongoing or new projects, a focused response on those projects is not possible. However, as stated previously, the contamination documented in the CMS Report originated from spills and leaks that mostly occurred

decades ago. Since that time, waste handling and management practices have considerably improved. LBNL has established extensive training program for all current as well as new staff depending on their activities. The following training courses are required for generators of hazardous wastes at LBNL:

- Environmental Health and Safety (EHS) # 604, *Hazardous Waste Generator Training*, is required for all generators of hazardous waste at Berkeley Lab.
- EHS # 610, *Waste Accumulation Area (WAA) Supervisor's Training*, is required for WAA managers at Berkeley Lab.
- EHS # 614, *Satellite Accumulation Area (SAA) Management*, is required of researchers and others who generate hazardous and mixed wastes and who are responsible for management of SAAs.

Containment for accidental releases of hazardous materials at the LBNL Hazardous Waste Handling Facility is provided in all handling and storage areas. The building is designed to prevent spilled or leaked liquids from passing through the floors. Floors are constructed of reinforced concrete covered with a chemical-resistant, epoxy resin-based coating, trowel-applied and able to withstand high-impact loads such as forklift traffic. Each storage unit and other areas where hazardous materials are handled have grate-covered trenches (draining to containment sumps) at all door openings and perimeter concrete curbs at the base of all interior and exterior walls. Curbs are coated with the epoxy material described above.

COMMENTER #4: Mr. Daniel Robert Zangato

COMMENT 4-1

Where did you sleep last night? I slept outside. And I have to sneak in where I have to sleep. I'm homeless. And you're talking about saving the environment. Screw the environment, you know. Hey, talk to me, you know. Like I said, I can say it in 20 seconds.

RESPONSE 4-1

Comment noted.

COMMENTER #5: Mr. Jim Cunningham

COMMENT 5-1

First of all, I do want to put it into the record and give you a copy of a letter that we sent to DTSC a couple of years ago. This has two elements that are very important about the subject we're talking about.

RESPONSE 5-1

DTSC acknowledges receipt of the letter dated June 20, 2003 (Please see Attachment1 in the List of Attachments at the end of this document). DTSC responded to that letter on October 16, 2003.

COMMENT 5-2

And the other thing, I'm very happy to hear the people who commented about the positive nature of a citizen advisory group. I would hope that DTSC would realize that any rule that exists can be changed or whatever and I would like that DTSC realize that a citizen group can be a help to this whole process. So I would like to have a positive response from you on that issue. Thank you.

RESPONSE 5-2

Please refer to Response to General Comment No, 3.

COMMENTER #6: Mr. LA Wood

COMMENT 6-1

My name is LA Wood and I sit on Berkeley's Environmental Commission. I have sat on that commission for four years. I have been involved with LBNL for almost the extent of the 15 years I want to speak to a number of things about this process. I will write written comments to some of the technical aspects of the project, because I do believe that it is under-investigated in certainly the areas of geology. I mean it's a no-brainer. And certainly the areas that we are most concerned about, you know the report tracks around.

RESPONSE 6-1

Characterization of the geology as under-investigated is not accurate. As noted in the Response to Comment 1-6, the RFI report presents detailed maps of bedrock geologic units, faults, surficial geologic units, stream courses, storm water drainage systems, and landslides, as well as geologic cross sections. These maps and cross sections were based on the highly detailed synthesis of LBNL geologic data presented in the Converse Consultants 1984 Hill Area Dewatering and Stabilization report (Converse, 1984), and supplemented by additional geologic mapping and a substantial amount of subsurface drilling data obtained by Environmental Restoration Program (ERP) scientists during the RFI. The Converse Consultants synthesis included a thorough review and analysis of all known previously existing geologic studies at and adjacent to LBNL, and presents a detailed geologic map of LBNL and the surrounding regions as Plate 2 of that report. In addition, the CMS Report presents site-specific conceptual models describing hydrogeologic characteristics and the distribution and fate of contaminants for each site.

Please see Response to Comment 9-2 of this section for more details.

COMMENT 6-2

But I think sooner or later I think with environmental restoration, I think the Lab looks at a good number of you folks here, that we need to figure out a way in the future for us to walk into this concerned community instead of running side by side with it, avoiding it.

RESPONSE 6-2

DTSC appreciates the commenter’s concern for interaction between the community and DTSC. Again, DTSC sincerely believes it has made a good faith effort in public outreach on this project. Please refer to the Response to General Comment No. 1. The history of public outreach activities by DTSC regarding this project is summarized in that section.

COMMENT 6-3

I do also want to support the community in their request for a CAG. And I want to bring to the public record some of the history.

RESPONSE 6-3

Please see Response to General Comment No. 3 and Response to Comment 2-2 regarding a Community Advisory Group.

COMMENT 6-4

Unlike everyone in this room, I'm a Commissioner and I've sat at the environmental meetings so I can speak directly to them. I can tell you that over the course of the last four or five years that I'm probably the only commissioner who has sat at that table consistently for the four quarterly meetings and that we haven't had commission participation. Oh, yes, we've had it at the top of our agenda announcing a meeting, but it has been very contentious the issue of bringing LBNL -- as a matter of fact, six months ago LBNL made a presentation or thereabouts. The question was asked, listen, you guys seem to be brain dead about responding to this issue, we want them to come. There was silence. In other words, even though our political arm of the city wants to extend this monitoring and have this commission be an oversight, it has expressed too that if the bodies come to the agreement that we don't want to, not that I'm not interested, and not that I'm not responding to you as a private citizen, but I'm not here as a commissioner tonight.

RESPONSE 6-4

The RCRA public involvement process is specified under regulation, which does not provide for the establishment of another coordinating body like a CAG. However, if any citizen wishes to participate in our decision making process, we are open to discussing ways to accommodate the request. Please refer to the Response to General Comment No.1.

Regarding the level of community participation in the public workshops and public hearings that have been held on this project, the number of members of the public that have attended ranged from approximately 8 to 15 persons.

COMMENT 6-5

Also, you should also know that the citizen participation has been half-hearted and I wish there was more. I am grateful for people like Tom Kelly stated, it would be great if you could draw a line and not bring back the 2001 remembrance of being here. There are many, many reasons why the community has reacted to you the way that they have. And I know it hasn't' pleased you, but the truth is that we have been disenfranchised by this process and that we only get brought into it a month or two or three before we have to come in for a meeting like this and sign off. And that's what this meeting is, it's a sign-off. And so we haven't had the kind of process that's necessary.

RESPONSE 6-5

LBNL has been placing all project related documents in the Berkeley Public Library for public review at the same time that they have been submitted to DTSC. The CMS Report was available in the library in July 2004, approximately 10 months prior to the public hearing. At that time we announced we would accept public input on the report throughout out technical review. DTSC previously informed the public that it was free to review and comment on documents at any stage. Therefore, DTSC respectfully disagrees with the comment that “not enough time has been provided” to review documentation on this project. Please see the Response to General Comment No. 1 for more details on the availability of documents for review by the public.

COMMENT 6-6

I was appalled at the fact that DTSC would dare send a letter to our city government regarding a community CAG. As I understand it, a CAG is driven by community members, not by the City of Berkeley, but by community members. Yet, we didn't even request to DTSC to have a CAG, but you were already responding politically to the City of Berkeley. That to me is indicative of how political this process is and how much we have sat in the back seat of this process and we are very, very concerned about that.

RESPONSE 6-6

It was brought to DTSC's attention by a City of Berkeley representative that a request for a Community Advisory Group was going to be brought before the City Council by the Community Environmental Advisory Commission. DTSC took the proposal under consideration and determined that the Berkeley City Council should have additional information when they considered this matter at their May 24, 2005 session. That was the reason the letter was sent to the City Council members and the City Manager. Also, please refer to the Response to General Comment No. 3.

COMMENT 6-7

I know that I have been working now at the Richmond Field Station, and I recognize what happened out there. It found itself in this quagmire, regulatory quagmire, where you couldn't get responsibility out of anyone, no one was being responsible, no one was taking protective action. So what did they do, they went to Cal EPA and maybe that's what we need to do as a community group, go to Cal EPA and say, hey, we're an affected community, we've been standing here for 15 years trying to get the facts and can't get them. And I say that, and I look at this letter that you sent to the City Council saying, oh, we would prefer to deal with community groups.

RESPONSE 6-7

DTSC has been and will continue to be transparent in its oversight of the LBNL's implementation of these corrective measures. If, at any time, community members have questions or concerns, they should contact Nathan Schumacher at his toll free number, 1-866-495-5651 or send E-mail at NSchumac@dtsc.ca.gov. Mr. Schumacher and other DSTC staff will respond to all such inquiries as quickly as possible.

Regarding the DTSC letter to the City of Berkeley, City Council, please refer to Response 6-6.

COMMENT 6-8

Well, what we really need is for the community members to come together so you don't have to give the information to each of us one at a time. When I call your offices what response do I get? I get the sense that I'm wasting your time and I'm taking away your workday, and maybe I am, but if each one of us does that, do you see how problematic the education of the public is. And that is what this public participation component is all about, and we missed it. And as a matter of fact, six months ago I asked for some information regarding this process that I thought was critical that was public information. I waited over a week so that DTSC's attorney could make the determination that, yes, these documents should be given to me. And I would say that's a back seat that we don't like with DTSC.

RESPONSE 6-8

DTSC strives to be responsive to public information request. However, DTSC also has legal obligations to facilities to not release trade secret information which is submitted to DTSC. Therefore, sometime, a decision on whether a document can be made available to the public may take us a week or longer. As noted in Response 6-7, DTSC staff will respond to all inquiries as quickly as possible.

COMMENT 6-9

We recognize how difficult it is to come and regulate a business when that business is the federal government, when that business is DOE. That is a very difficult thing. We know it because we live in a community where we have to go approach that business at the federal building, at DOE processes, and not just in a normal zoning process that we would normally deal with any business. So we meet them there. And so what I'm asking from you tonight, and I think a number of us are asking for, is for you to look at this. Look at this failed process. It has some elements that work. And for the people that are coming around, because, you know, we're known entities here and we are trying to educate ourselves piecemeal, and your workshops are only a product of a year ago when you came to the process and said, well, hey, it's not working here, and you said, well, if you sit down with us across the table so we could ask you questions, it would be great, and at least we had some of that happening today. But you know what the problem is, it's too little, too late. Fifteen years and here we are.

RESPONSE 6-9

DTSC would like to again reiterate that it believes that all documentation related to Corrective Action at LBNL has been made available to the public at the same time it has been submitted to DTSC. DTSC appreciates the technical complexity of this information and that is why it has held public workshops prior to public hearings to inform the community. This activity was in addition to Fact Sheets and surveys regarding investigations at the site. DTSC points with pride at its public outreach activities as described under the Response to General Comment No.1. DTSC is committed to continuing this public outreach during future phases of corrective action activities at LBNL.

COMMENT 6-10

Accelerate the cleanup. Someone talked about the money. Damn right the money pushes this process. Don't be dizzy thinking it doesn't. This is a political process. Environmental protection is a political process. In 2000, I think I was over in San Francisco with some of the staff here at the DOE when you were talking about waste management saying, well, here comes Bush, we know what's going to happen to environmental protection. And that's what has happened to it, it's gone away, it hasn't been there to stand up. That's why we see some of the cleanup actions are non-cleanup actions. And it's fearful for us that we would have the cleanup process take place in a political time where we had someone who is not responsible for cleanup, because we know that we're still here with the contamination. So, hey, don't clean it up now if you don't want, but what we want from you is a guarantee that you will clean it up and that you will monitor and track it and track the person that polluted it, because I think that's important. I think of all the things, solar energy and all of the magnificent science, things that come from the Lab, environmental protection is not one of them. It doesn't come. Environmental Restoration. If you look up there at the last 30 years, you could write a book on failure, that's why I'm here tonight.

RESPONSE 6-10

Regarding the implementation (including monitoring and tracking) of these corrective measures, DTSC and LBNL are both committed to cleaning the remaining contamination at this facility. Regarding the quality of the cleanup actions at LBNL, there were pilot studies conducted on several groundwater remediation technologies. LBNL reviewed and selected the best available technologies for groundwater remediation at this site. DTSC has required this cleanup under the HWHF permit issued to LBNL. This is

the enforceable mechanism that DTSC has used and will continue to use to ensure remediation activities are implemented by LBNL and its funding agency, the DOE. LBNL and DOE have shown that they are committed to completing the cleanup at this site and DTSC anticipates the same commitment to continue into the future.

COMMENT 6-11

And also, I do want to mention one more thing about the radiation issue, because I'm not going to try to address that in my comment, because it's a serious issue. You've got the radiation just like this and you posture up one slope at one median and say it's not our jurisdiction and another. And tonight we've talked about it in two different terms and we need to have a different kind of process, we need to have the cooperation.

In 1999 when our City Council unanimously supported us being involved in the environmental restoration program at LBNL, that would have been a perfect opportunity for you to allow a few of us, a commissioner, a few people from community groups to come forward to sit there instead of putting us to this point so I have to stand up here tonight and so we have to push against you and so I have to file public records requests or I have to call your phone and harass you because you won't even tell me that I call you too much. And that's what's wrong with public participation.

So if you want us to buy in, there's a lot you can do beyond just the program you put up on the table. I don't think the program you put on the table is an appropriate one for this community. I believe that you need to clean that site up to the way that you found it, and I think that that's the least that this community be owed and I believe that I -- and I respectfully request that DTSC look at this issue, a community action group, call it what you want, and set up a process so that we can essentially monitor it at least for the rest of the cleanup, and that, you know, we be a part of some of the fine tuned parts of the process after you just rubberstamp and go up there, and that we be a part of that process so we can monitor it. And that you take our comments seriously, because I feel as though I've made lots of comments through this process and I don't see one of my comments embraced by anything that LBNL has done over the last 15 years, and that's very disappointing to me that things that I've offered have not been obstructionist, they have been protectionist, and I don't see any of them. Thank you.

RESPONSE 6-11

DTSC would like to acknowledge that the commenter feels frustrated regarding the public outreach between himself and DTSC on this project. DTSC believes it has made a good faith effort in reaching out to concerned citizens such as the commenter and organizations such as the Committee to Minimize Toxic Waste. As stated in responses 6-4 and 6-5 as well as Response to General Comment No.1, DTSC has made extensive outreach to the community on this project. It is unfortunate that the commenter does not have the same opinion.

COMMENTER #7 Ms. Jane Kelly

MS. KELLY: Hi, my name is Jane Kelly. I'm a resident of Berkeley. I am very new to this discussion. I certainly have zero scientific credentials, and to be perfectly frank, I don't know much about the issue, the contamination, that we are talking about this evening.

COMMENT 7-1

However, I have spent the last seven years of my life working for a firm that specializes in community outreach and public participation. And as a neutral observer, I believe it's fair to say that this is not working. There is obviously a large measure of distrust from the community. This is not a functioning

dialogue and I just wanted to say that we in my firm would strongly advocate the establishment of a citizens' advisory group. It's a good thing. It is truly a good thing. I have seen it work extraordinarily well over the past seven years, I would ask you to embrace it. I'm sure nobody likes to have this conflict, I know you don't and I know these folks don't, and I really do believe that if you accept this and embrace it and form a citizens advisory group and set the past aside and start over, that this can truly be a good result.

RESPONSE 7-1

DTSC concurs with the commenter regarding the importance of community outreach and public participation. As stated in the Response to General Comment No. 1, DTSC believes that it has been conducting a very robust community outreach effort on this project.

COMMENTER #8 Ms. Tuala Gordon

MS. GORDON: I'm Tuala Gordon at 1546 Milvia.

COMMENT 8-1

And on behalf of Save the Strawberry Creek Watershed, I would like to hand you a petition to save the Strawberry Creek watershed signed by over 400 individuals reflecting wide community concern over the contamination at LBNL, and wide community interest and support for the preservation, cleanup, and responsible management of the headwater areas of Strawberry Creek. [Petition requested the following]

Stop the further destruction of the Strawberry Creek Watershed.

RESPONSE 8-1

DTSC acknowledges the receipt of petition to save Strawberry Creek Watershed signed by 400 plus individuals reflecting wide community concern over the contamination at LBNL and community interest/support for the preservation/cleanup of the head water areas of Strawberry Creek.

Regarding the Strawberry Creek Watershed and the contamination at LBNL, please see Responses to several other comments including Comment 9-2, Comment 9-6, and Comment 15-1.

COMMENT 8-2

Prepare an Environmental Impact Report. LBNL avoided conducting an EIR for the Molecular Foundry as required in the law.

RESPONSE 8-2

Please be advised that the UC Regents is the lead agency under CEQA for the molecular foundry project, not DTSC. Accordingly, we suggest that the commenter direct her concerns related to CEQA and the molecular foundry directly to the UC Regents office.

COMMENT 8-3

Acknowledge that Nanotech may have serious health and environmental impacts. The US EPA states that the health effects and environmental impacts of nanotechnology are unknown. LBNL claims that there is no danger, yet they have no scientific evidence to support that claim. Ultrafine particles, similar in size to nanoparticles, cause respiratory and cardiovascular disease.

RESPONSE 8-3

Please note that DTSC is not in a position to make any statements regarding nanotechnology. DTSC does not have any regulatory authority in this area.

COMMENT 8-4

Decontaminate existing buildings that have been decommissioned. LBNL has contaminated and abandoned its own buildings on the site. LBNL should remediate this contamination instead of constructing new facilities in the watershed.

RESPONSE 8-4

LBNL is in process of cleaning up past contamination at the site. There are buildings where decommissioning will occur such as the Bevatron Building. That building would be under the oversight of DOE, not DTSC.

COMMENTER #9 Ms. Pamela Sihvola

COMMENT 9-1

My name is Pamela Sihvola, and I co-chair on the Committee on Toxic Waste here in Berkeley We have followed the situation at LBNL, myself personally for over a decade, and the environmental condition since the early 1990s.I will repeat what I said before. I believe the verification of risks. We heard from DTSC, it's indeed misleading, if all radioactive contamination and exposure has been involved. Also, as I said before, it appears that the methods used as a foundation for these investigations is flawed. It is based only on known contamination or known activities, and indeed if you are truly following the scientific process, a lot of the grounds and higher than the Strawberry Creek watershed should have a grid, and in each grid within a certain known distance from each other, monitoring wells to see if the contamination has spread beyond what these subjects that we are currently dealing with indicate.

RESPONSE 9-1

The commenter raises a question on radioactive contamination and exposure. We respectfully refer the commenter to the Response to General Comment No. 2 for more details regarding radioactive contamination.

Regarding the commenters' assertion that the investigation methods conducted to date were not based on sound scientific principles, DTSC must respectfully disagree. The facility investigation followed the standard environmental investigation approach which sequentially identified areas of potential contamination, confirmed the status of potential contamination, and then defined the lateral and vertical extent of contamination when it was identified. This approach is based on the scientific principle of biased sampling and it is designed to optimize the ability to identify and define areas of potential surface and subsurface contamination. The investigation approach focuses on areas of contamination and allows for the incorporation of additional information such as site history, groundwater flow gradients, and contaminant migration characteristics that would otherwise not be considered if the investigation were based on uniform monitoring grid approach that you recommend.

DTSC has conducted an assessment that evaluated past operating practices and historical uses of the site. It identified where spills, leaks, or other chemical releases either occurred or could have occurred.

Eight of the 163 units were identified as radiological units that are addressed under the authority of the US Department of Energy.

References

- RCRA Facility Assessment for Lawrence Berkeley National Laboratory, Department of Toxic Substances Control, Region 2, November 1991
- RCRA Facility Assessment at the Lawrence Berkeley National Laboratory, Environmental Restoration Program, September 30, 1992

COMMENT 9-2

The Strawberry Creek watershed has a very complex hydrogeology. And actually what I would like to do is to bring up the map. For many years we have asked the Lawrence Berkeley National Laboratory to provide a comprehensive site map that would include the entire watershed. What we did with the help of UC Berkeley, we put together several overlays which are based on the 1875 surveyor map of the vicinity. Everything in blue indicates the original historic creeks. Everything in red indicates the USGS fault lines in the canyon. Everything in that area is in the middle here. The black spots indicate the groundwater contamination plumes.
These red lines here, these are related to the east canyon Wildcat Fault which is a fault zone on the eastern side of the canyon, an LBNL site. This is the Hayward Fault Zone, and there are cross faults, the New Fault, and similar cross faults across the LBNL site.

RESPONSE 9-2

Mapping conducted for the Converse Consultants 1984 geologic synthesis and for the LBNL RFI provides data that extends a significant distance beyond the LBNL boundary and is sufficient to address the needs of the corrective action investigations. This mapping includes a substantial portion of the Strawberry Creek watershed east of the UC campus. A synthesis of geologic and geotechnical information for the entire Strawberry Creek watershed would involve mapping of a large area outside the boundary of LBNL. This is beyond the scope of the corrective action investigations, and is not necessary to address the characterization and migration potential of contaminated soil and groundwater. Please note that the RFI report clearly indicates that nature and extent of contamination is well established and mapped.

Based on the site assessment, DTSC has conducted site investigation over eight years (1992-2000). DTSC implemented a screening process that determined which units with soil contamination should be evaluated further due to potential risks to human health and the environment, and which units should be excluded from any further action. Soil screening process consisted of a comparison of the concentrations of chemicals detected in soil to all three standards: LBNL background levels, US Environmental Protection Agency Region 9 Preliminary Remediation Goals (PRGs) for residential soil, and California modified PRGs for residential soil. Chemicals detected at 30 units were considered potential threat to human health or the environment.

References

- Draft Final RFI Phase I Progress Report, Environmental Restoration Program, Lawrence Berkeley Laboratory, October 30
- Draft Final RFI Phase II Progress Report, Environmental Restoration Program, Lawrence Berkeley Laboratory, November 1994
- Draft Final RFI Phase III Progress Report, Environmental Restoration Program, Lawrence Berkeley Laboratory, September 1995

- Draft Final RCRA Facility Investigation Report for the Lawrence Berkeley National Laboratory, Environmental Restoration Program, September 2000

COMMENT 9-3

You can see that the plumes have odd shapes. This is a plume here, it is flowing in an old creek bed of Chicken Creek, and I can't really -- I understand that anyone by looking at the shape of this one or this one or this one or this one, can you say that these plumes are contained? They clearly have moved. The source of contamination that sweeps forth right here and all of these that you see here is moving downstream, downstream along the old creek bed, and the canyon wall is here.

The water contamination is up here, so the BLC plume is also moving south to the canyon bottom. And then the other water here, which is in the Blackberry Canyon watershed, is moving along the north slope of Strawberry Creek, as are these other plumes.

RESPONSE 9-3

Groundwater contaminants at LBNL initially moved down-gradient from the locations where the original chemical spills or leaks occurred, thereby forming groundwater contaminant plumes. These plumes eventually reached equilibrium and further down-gradient movement of the plumes stopped. The shape of a plume cannot be used to determine whether or not it is currently moving, but is the result of the combined effects of several factors including: a) the locations of the original spills; b) the chemical properties of the contaminants, c) the groundwater gradient (direction of flow) and velocity; d) the time since the initial contaminant release; and, e) the action of natural and artificial mechanisms (diffusion, dilution, degradation, pumping etc.) that attenuate (reduce concentrations of) contaminants. The plumes stabilized after attenuation processes reached equilibrium with the factors that caused them to move. The groundwater contaminant plumes at LBNL are not currently moving, and there is no evidence of recent movement, based on data collected over the past 13 years.

The degree of containment of a plume cannot be determined from its shape, but, must be assessed by viewing variations in contaminant concentrations with time in key monitoring wells. Such data are presented in detail in both the RFI and CMS Reports, and show that the groundwater contaminant plumes are contained; that is, the concentrations of contaminants remain relatively static or are have been decreasing in key wells monitoring the down-gradient edges of the plumes.

LBNL monitors the quality of water in creeks flowing offsite, including tributaries of Strawberry Creek. No chemicals of concern have been detected in surface water samples collected over the past seven years. The long-term surface water monitoring program at LBNL will consist of annual sampling for Volatile Organic Compounds (VOCs) and metals during the rainy season and also during the dry season from creeks that are flowing. Surface water sampling requirements will be specified in the Groundwater Monitoring and Management Plan.

Please note that LBNL submitted a CMS Workplan in May 2002. The primary purpose of the workplan was to appropriate remedial alternatives that were to be considered and evaluated to eliminate, reduce, or control risks to human health and the environment from the contaminants identified during the investigation. The CMS Workplan determined that in addition to 30 units, six other units required further evaluation. This determination was based partly on new findings for some of the areas and partly on comparison of chemical concentrations in the soil to the most updated PRG values. The CMS Workplan also specified that all locations where chemicals were detected in groundwater and surface water were to be included in the CMS.

All issues in the draft Final RFI report have been addressed during the course of examining 155 units (both SWMUs and AOCs). These 155 units have been reported at quarterly intervals.

Reference

- RCRA Corrective Measures Study Plan for the Lawrence Berkeley National Laboratory, Environmental Restoration Program, May 2002

COMMENT 9-4

In 2003, we met with Mohinder Sandhu and his staff. We sent them a letter requesting that DTSC request LBNL to provide for the benefit of the community a comprehensive map that would show all these elements, including slide zones, sewer lines, every possible element that will impact the site and the movement, and that would add to the contamination. They refused to do that. The DTSC said we are not going to ask LBNL to do that. Of course, we have asked LBNL to do it on our own. We don't see a comprehensive map here, everything is piecemeal. When you look at the site on the RSI report, they are all 8 1/2 by 11 sheets, 8 1/2 by 17 sheets. You don't get the comprehensive view. I'm asking that this be remedied before any final decision is made on these corrective measures. There should be a map that would show the whole entire site, all of the elements. And I will also add in more detail in my written comments.

RESPONSE 9-4

The RFI Report presents a unified site-wide approach to characterization of the site and assessment of surface and groundwater pathways for contaminants. Data on stream courses, geology, faults, landslides, areas of contamination, hydraugers, storm drains, and springs were all considered in this analysis and maps of these features are presented in the RFI Report. The scales and areas selected for maps of these data were selected to best illustrate the features of interest. All the mentioned features are not compiled on a single map, since showing numerous features on one map creates a figure that is crowded, confusing, and difficult to interpret. The locations of sanitary sewer lines are not relevant on a regional basis, but have been considered in the detailed site-specific investigations presented in the RFI Report for cases where they potentially impact contaminant migration.

Please see Response to Comment 9-2 for more details.

COMMENT 9-5

And I would like to read for the record what I read before from a 1949 geologist's report for this site, where the Orinda Formation is used as the foundation for not cleaning up these plumes. The Orinda Formation, and I'm not going to read the whole thing here, the area as available is a four-acre site needs to be X-rayed, this is 1949 before the building was constructed, and leveled off. The bedrock beneath this beveled surface will be comprised of poorly consolidated marine sediments. The Orinda Formation absorbs water freely and a lot of those features that are associated with it are also quite pervious so the whole mass is really saturated in the area adjoining the Lisbon Tract to the east, which is comprised of the same formation as those under consideration, all the Lisbon Tract. They had 68 streams from which they once collected water for the domestic supply of Berkeley in the early days. There appears to have been considerable landsliding in this active area, and the appearance of heavy rainfall, the deep overburden and underlying marine sediment becomes quite soft from the absorbed water, seeps come out of the ground in many places, and even while several inches of rain are falling, this was a stream in 1949. There are about four seeps issuing from the ground in the vicinity of the Bevatron.
There are two known permanent streams in the area where puddles have been at the old site, and pipes leading out from the paved entrances have been flowing water for many years. There is a sump pump in

the basement of the Bevatron pumping water constantly. The former water reports water from each well, and it is these three wells here, all of which flow to Strawberry Creek.

RESPONSE 9-5

The 1949 report by Marlave cited in the comment provides subjective observations of surface infiltration only in a very small part of LBNL, so it cannot be used to estimate permeability for the Orinda Formation either below the water table, or throughout the facility. The CMS Report notes that rocks of the Orinda Formation have low permeability values with the exception of a few areas where permeability is relatively high apparently due to the local presence of coarse-grained strata. The hydraulic conductivity (permeability) of the saturated portion of the Orinda Formation at LBNL has been extensively tested in numerous locations by hydraulic testing and yield testing of monitoring wells. The results of these tests are documented in the RFI and CMS report.

Please see Response to Comment 9-2 and 9-3.

COMMENT 9-6

The creeks don't seem to exist. The water goes somewhere and we need to see a comprehensive diagram that shows where all of these waters are going right at the moment, and indeed, the formation of a citizen advisory group, and we would like to call it citizen watershed advisory group, should be formed to include many citizens who are very interested in the three issues in the city of Berkeley. The city of Berkeley has a policy of day-lighting creeks downstream. There is a proposal currently considered for the west campus site to open Strawberry Creek there. They are day-lighting sections all the way down to the bay. And there is community-wide interest in the creeks and the leveling of the creeks, and I think it is absolutely imperative that DTSC will sponsor a citizen watershed advisory group to address all of these issues to guarantee that we will have clean, good water in Strawberry Creek from here on and for years to come. It is very, very important, and I would comment, as I said, more in detail in my written comments. But I ask you to consider for the group and those 400 signatures that you already have received, they are a foundation to show that there is wide community interest in this issue, and I hope that you will start helping us starting tonight. Thank you.

RESPONSE 9-6

As noted in Response to Comment 9-3, LBNL monitors the quality of water in creeks flowing offsite, including tributaries of Strawberry Creek. No chemicals of concerns have been detected in surface water samples collected over the past seven years. The groundwater plumes at LBNL are not a source of contamination to Strawberry or any other creeks that originate in the Berkeley hills.

COMMENTER #10: City of Berkeley, Phil Kamlarz, May 26, 2005

COMMENT 10-1

The Berkeley City Council recently took a position on the process of cleaning up legacy pollution at the Lawrence Berkeley National Laboratory. Please accept these comments in addition to comments made by the City's Toxics Management Division.

The City encourages the Department of Toxic Substances Control (DTSC) to clean up the site to the most restrictive cleanup standards feasible. To this end, the City seeks additional funds from the Department of Energy to fulfill this goal.

The City also encourages the DTSC to use the Community Environmental Advisory Commission meetings as a venue to disseminate information, receive public input, and respond to public concerns for the long term monitoring of any pollutants left in place.
In addition, the City requests that DTSC and the Water Board review the geological structure of the campus in more detail to determine if pollution plumes are fully delineated and stable or whether the complex geology will permit migration downhill or into surface or near surface water.

RESPONSE 10-1

Regarding the cleanup of the site to the most restrictive cleanup standards feasible, the DTSC is aware of the City of Berkeley's concerns with cleanup standards for LBNL. DTSC considers applicable requirements of all local, state, and federal laws and regulations in establishing site specific cleanup goals that are protective of human health and the environment. Some of the applicable statutes include, but are not limited to, the Safe Drinking Water Act, the Solid Waste Disposal Act, the Toxic Substances Control Act, the Clean Air Act, and the Clean Water Act. DTSC applies these requirements consistently at regulated sites all across the State of California in accordance with nationally accepted risk assessment guidance protocols. In addition, DTSC also evaluates the long term and short term effectiveness of proposed remediation alternatives, Please note that the long-term goal for groundwater cleanup goal is MCLs. In some case, due to technology limitations, this goal may not be feasible. DTSC believes that goal of achieving MCLs may be highest possible standard in this case.

DTSC agrees with the City of Berkeley's recommendation to use the Community Environmental Advisory Commission meetings as a venue to disseminate information, receive public input and respond to public concerns regarding the long term monitoring of groundwater contamination at LBNL. DTSC has and will continue to work with CEAC to share information and seek input on this project.

Regarding the geological structure of LBNL and the migration of contamination, please refer to Response to Comment 9-6.

COMMENTER #11 East Bay Municipal Utility District, William R Kirkpatrick

COMMENT 11-1

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Negative Declaration for the Department of Toxic Substances Control Proposed Soil and Groundwater Cleanup at Lawrence Berkeley National Laboratory located in the City of Berkeley. EBMUD has no comments regarding environmental issues for this project.

RESPONSE 11-1

Comment noted.

COMMENTER # 12 Andrea Pflaumer

COMMENT 12-1

As a resident in the Northeast Berkeley Hills I am deeply concerned about the groundwater clean-up (and the eventual site clean-up) at the Lab. I want to strongly encourage you to develop a citizen review/action panel similar to the one that was formed after DTSC took over the Campus Bay project from Richmond.

RESPONSE 12-1

Please refer to Response to Comment 1-8 regarding a Community Advisory Commission.

COMMENTER #13: Sean Nozzari, District Office Chief, Office of Permits Department of Transportation, District 4 (letter dated June 7, 2005)

COMMENT 13-1

Thank you for including the California Department of Transportation (Department) in the environmental review process for the corrective Measures Study project. The comment presented below is based on the Negative Declaration (ND), and applies only if the project involves work in the State Right of Way (ROW). As lead agency, the Department of Toxic Substances Control is responsible for all project mitigation, including any needed improvements to state highways. Please notify the applicant that the Department will not issue an encroachment permit, discussed below, until our concerns are adequately addressed. Further comments will be provided during the encroachment permit process; see below for more information regarding encroachment permits.

Work that encroaches onto the State ROW requires an encroachment permit that is issued by the Department. To apply, a completed encroachment permit application, environmental documentation, and five (5) sets of plans clearly indicating State ROW must be submitted to the address below. Traffic-related mitigation measures should be incorporated into the construction plans during the encroachment process. See the website link for more information.
http://www.dot.ca.gov.hq/traffops/developserv/permits/

RESPONSE 13-1

This project does not involve any work in the State Right of Way.

COMMENTER #14: D Thompson and KJ Sharp (letter dated June 8, 2005)

COMMENT 14-1

Since 1988, we have been two of the Lawrence Berkeley National Laboratory's nearest downstream neighbors. A daylighted portion of Strawberry Creek's North Fork flows across the street in front of our home. Hence we are eager to hear of any progress being made to clean up soil and groundwater contamination stemming from Lab operations over the past 65 years.

On the technical side, neither of us feel qualified to judge whether the recommendations set forth in the DTSC's Draft Corrective Measures Study are adequate to remediate this legacy contamination to the highest standards feasible in the most cost-effective and timely manner.
However, from the standpoint of *public involvement*, we think that the cleanup effort – if handled correctly – represents a great opportunity for your agency (and LBNL) to build visibility and some much-needed good will among the Lab's residential neighbors.

For this reason we strongly suggest that the DTSC do everything within its power to encourage that a Citizen Watershed Advisory Group (CWAG**)** be established to track implementation of whatever corrective action measures are adopted.

We are aware that the Berkeley City Council recently frowned upon this idea when proposed by Berkeley's Community Environmental Advisory Commission. Likewise, we know that LBNL typically prefers to limit citizen participation in oversight activities to the bare minimum required under the law. Yet it is our understanding that CWAG will be associated with DTSC's new cleanup effort near UC's

Richmond Field Station. If appropriate for Richmond, why shouldn't a CWAG also be a part of the DTSC's cleanup strategy for LBNL?

Our feeling is that to be real, "public involvement" should be more that a DTSC fact-sheet title, an annual public hearing, or a headline in one of the Lab's many PR publications.

RESPONSE 14-1

DTSC appreciates the commenter's concerns. DTSC believes that the LBNL site is properly characterized to identify past releases and the proposed remedies in the CMS Report are proper cleanup measures to address soil and groundwater contamination at this site.

Please refer to the Background, Past Public Participation section of this Response to Comments document regarding DTSC public outreach activities.

Please refer to Response to Comment 1-8 regarding a Community Advisory Group.

COMMENTER #15: Mr. Bill Walzer (letter dated 5/28/2005)

COMMENT 15-1

I own a house on Allston Way that has Strawberry Creek running through the backyard. It is lovely but would be so much richer if more fish could survive in it. Please do everything to clean up the contamination up at the Lab.

RESPONSE 15-1

Soil and groundwater contamination at LBNL are not affecting plants or wildlife either at the Lab or at offsite areas. LBNL monitors the quality of water in creeks flowing offsite, including tributaries of Strawberry Creek. No chemical contaminants have been detected in surface water samples collected over the past seven years, and ecological risk assessments conducted using historical data showed no adverse effects to plants or wildlife. Monitoring of surface waters at LBNL will continue during the remedy implementation phase which will be overseen by DTSC.

COMMENTER # 16 Sihvola – Wood (letter dated June 7, 2005)

The following comments represent years of community effort, frustration and disappointment with regulators in our commitment to analyze, inform, and insist on seriously cleaning up Lawrence Berkeley National Laboratory site's radioactive and hazardous chemical contamination from the air, soil, soil water, groundwater, creeks, trees, vegetation, and aquatic species on the University of California lands in the headwater areas of the Strawberry Creek watershed in Berkeley and Oakland.

COMMENT 16-1:

DANGEROUS TOXIC CONTAMINANTS WILL REMAIN IN SOIL AND GROUNDWATER!
The proposed CMS Report is a good start but certainly it does not qualify to be called site cleanup, but rather it is a token cleanup plan that will leave in place at least 80% of the existing, kwon contamination for future generations to deal with. The CMS process is being used to facilitate LBNL's application to review its Hazardous Waste Handling Facility's operating permit. LBNL is a contaminated site that needs immediate, comprehensive cleanup and a Groundwater/Surface water Monitoring and Management Plan.

RESPONSE 16-1

Please note that the CMS and the permit renewal are two discrete issues that are being addressed independently. The Corrective Measures Study investigations are not being used to facilitate LBNL's permit renewal application for the Hazardous Waste Handling Facility. LBNL was directed to implement Corrective Action investigations in accordance with the May 1993 permit issued by DTSC and will continue to do so even after a permit renewal decision is made.

Regarding the comment that the cleanup is a token cleanup that will leave 80% of known contamination, this comment was also raised by commenter 1. Please refer to Response 1-7 which responds to this issue.

Regarding a Groundwater Monitoring and Management Plan, LBNL will prepare one as part of the Corrective Measures Implementation (CMI) phase. The Plan will include: a description of the vertical and lateral extent of groundwater contamination; a listing of specific perimeter groundwater monitoring wells that will be used to monitor potential migration; a description of specific surface water monitoring requirements; and, a description of LBNL management controls. The plan will include surface water sampling requirements.

Throughout the investigation phase, LBNL has implemented interim corrective measures to protect human health and the environment. These measures included excavating soil contaminated with solvents, metals, PCBs or petroleum hydrocarbons; removing source of groundwater contamination; eliminating pathways that could contaminate groundwater or surface water, and preventing further migration of contaminated groundwater. Groundwater has been pumped and treated to non-detectable levels of contaminants using activated carbon. The treated water has been discharged to sanitary sewer under East Bay Municipal District permit or reused during pilot tests to flush contaminant from the subsurface.

Examples of interim corrective measures include:

- Excavation of contaminated soil and offsite disposal - 20 locations
- Removing contaminants from subsurface soil using Soil Vapor Extraction - 2 locations
- Removing contaminated equipment/material and offsite disposal - 3 locations
- Pumping contaminated groundwater and surface treatment - 10 locations
- Collecting and treating contaminated subdrain water to protect surface water - 3 locations

References

- RCRA Corrective Measures Study Report for Lawrence Berkeley National Laboratory, Environmental Restoration Program, February 2005 (See section 1.3.3 for a detailed listing of Interim Corrective Measures)

COMMENT 16-2:

We ask that DTSC require LBNL to include an analysis of the Environmental Impacts from the proposed and continued operation of the Lab's Hazardous Waste Handling Facility (HWHF) in LBNL's Long Range Development Plan Environmental Impact Review (LRDP EIR), currently under preparation. In addition, we request that DTSC postpone its decision regarding the LBNL HWHF permit renewal until after the LRDP process has been completed. (Attachment A.)

RESPONSE 16-2

These issues are outside the scope of this CMS project. These same comments were raised during the Hazardous Waste Handling Facility draft permit comment period and they will be addressed in a separate Response to Comments document associated with a final permit renewal decision.
Note – Attachment A referred in the comment is included as Attachment 27 in the list of Attachments at this end of this document.

COMMENT 16-3

15 YEARS OF INVESTIGATIONS WITHOUT MEANINGFUL COMMUNITY INPUT! The lack of any meaningful citizen participation caused the Berkeley City Council on November 2, 1999, to formally request that members of the Berkeley community be included at the RCRA Quarterly Review Meetings (Attachment 1). DTSC, Department of Energy and LBNL all refused to allow any community participation at those meetings.

Instead, the Lab's response was to provide only an hour-long presentation, just four times per year, by a LBNL representative at 6PM before the officially scheduled Community Environmental Advisory Commission's (CEAC) meeting at 7PM. This untimely arrangement was poorly noticed and attended, providing no chance for the public to gain comprehensive understanding of the RCRA activities at LBNL, nor was there any time for meaningful discussion or input.

DTSC has failed to engage the public and for this reason we request that DTSC sponsor a representative Community Advisory Group that would be involved in the development of the Groundwater/Surface Water Monitoring and Management Plan (Attachment 2).

RESPONSE 16-3

DTSC understands the concerns regarding public participation. DTSC strongly believes that for the past several years, it has implemented numerous suggestions made by CMTW etc. to enhance the public participation activities. We are disappointed however, that the commenters fail to recognize the depth and breadth of DTSC's public participation activities in their comments.

Please refer to the Response to General Comment No. 1 for more details regarding public outreach activities by DTSC.

Please refer to Response to General Comment No. 3 regarding a Community Advisory Group.

Note – Attachments 1 and 2 referred in the comment are included as Attachments 10 and 11 in the list of Attachments at the end of this document.

COMMENT 16-4

HISTORY/BACKGROUND OF CONTAMINATION AT LBNL. The Lab originated on the UC Berkeley Campus in 1932 as the UC Radiation Laboratory (the Rad Lab). In 1940 it was relocated to its present site in the Strawberry Creek Watershed in the steep Berkeley Hills, east of the Central Campus next to the Hayward Earthquake Fault. The first major facility, the 184" Synchrocyclotron was built with funds from both private and university sources. After 1948, the US Atomic Energy Commission and its successor agencies funded the Lab. In 1972, the name was changed to from the Lawrence Radiation Laboratory to Lawrence Berkeley Laboratory.

From the past 65 years radioactive and chemical releases, and accidents have contaminated the once beautiful, pristine watershed of the Strawberry Canyon and nearby wild lands, affecting neighboring

residents, and school children attending the Lawrence Hall of Science, as well as people recreating on the canyon trails, swimming etc. (Attachment 3.)

The first Environment, Health and Safety related assessment of LBNL made by DOE was published in 1988. This first assessment was followed by Tiger Team Report of 1991 which found 678 violations of DOE regulations concerning management practices at LBNL, finding Berkeley-Oakland air, soil, and water contaminated with tritium, other radioactive substances and toxic chemicals. It is indisputable that the Lab was not in compliance with federal standards for radioactivity in air. Because of these findings, DOE funded the California Agreement in Principle (AIP) Program to be conducted by the California Department of Health Services (DHS), which has jurisdiction over radioactivity in California.

In September of 1995, the DHS Environmental Management Branch released the AIP Annual Report (Attachment 4). One of the AIP Report's criticisms was over the "efficiency and validity of the methods employed at LBNL to measure and monitor air-born tritium" (p.14). We believe this criticism caused DOE to cut the funding for the entire program a few months later. DOE then took over the handling of the 8 radioactively contaminated sites at LBNL for which the DHS Report had expressed serious concern. To Date, no report has been released for public review and comment regarding corrective action for clean up of these radioactive sites!

RESPONSE 16-4

According to the Department of Energy, which is the lead agency for investigation of radionuclides at LBNL, the Summary of Radionuclide Investigations (2003) has been available for public review in the information repository at the Berkeley Public Library since August 2003.

Note – Attachments 3 and 4 referred in the comment are included as Attachments 12 and 13 in the List of Attachments at the end of this document.

COMMENT 16-5

In July 1998 the US Environmental Protection Agency determined, based upon a preliminary hazard Ranking System (HRS) score, that LBNL was eligible for the National Superfund Priorities List, (NPL) under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA or "Superfund") (Attachment 5).

RESPONSE 16-5

On July 18, 2002 the United States Environmental Protection Agency (USEPA) announced that they had changed the site's Superfund status from "potentially eligible" for listing to "no further federal response". The USEPA noted that analysis of air, water, and soil samples confirmed that the site does not present a health threat to those working and living in and around the facility.

Note – Attachment 5 referred in the comment is included as Attachment 14 in the List of Attachments at the end of this document.

COMMENT 16-6

At that same time, the State of California had listed six locations at LBNL in the Hazardous Waste and Substances Sites List, aka the Cortese List (Attachment 6). And more recently in 2001, LBNL was included in the government list of cold war nuclear sites as a "California Hot Spot", because the facility handled Beryllium or radioactive materials (Attachment 7). These facts reflect both the complexity and

extent of the environmental impacts that LBNL operations have had on the Strawberry Creek Watershed lands in the Berkeley hills.

RESPONSE 16-6

The California Hazardous Waste and Substances List, more commonly known as the Cortese List, include six locations within LBNL. These sites are included as underground fuel storage tank sites where leaks had occurred. The City of Berkeley has made a determination of No Further Action for all six of these underground tank sites.

According to LBNL, they were not included in a government list of cold war nuclear sites as a "California Hot Spot". The newspaper article provided as Attachment 7 of the comments only refers to a list of facilities that could be eligible for federal compensation under the Energy Employees Occupational Illness Compensation Act (EEOICA), a program to provide compensation to individuals who developed illnesses as a result of their employment in certain federally-owned facilities in which radioactive materials or beryllium were used. The EEOICA is only applicable to LBNL because it was a DOE facility that handled beryllium and radioactive materials, and not because of environmental impacts. LBNL stated that they have collected numerous soil samples in the area of the beryllium shop inside Building 77. None of the 105 soil samples collected shown beryllium at levels of concern.

Note – Attachments 6 and 7 referred in the comment are included as Attachments 15 and 16 in the list of Attachments at the end of this document.

COMMENT 16-7

CMS Report lacks a comprehensive, cohesive, verifiable geologic mapping of the Strawberry Creek Watershed Area at LBNL, as well as the Synthesis of Surface and Subsurface Geologic Information

LBNL is located in an area that is seismically very active, i.e., next to the Hayward Fault (Attachment 8). It is for this reason that the Final CMS report should include comprehensive, verifiable geologic mapping of Strawberry Canyon, which depicts bedrock outcrops and geomorphic features including stream courses and landslides. It should also include the synthesis of surface and subsurface geologic information previously developed independently for the University of California (UCB) and LBNL.

RESPONSE 16-7

The CMS Report is a complementary report to, and relies on the data presented in the LBNL RFI report, which is the principal site characterization document. For this reason, the CMS only presents a brief summary of the geologic characterization data presented in the RFI Report and cites the RFI report for detailed information. The RFI Report was released for public review on November 15, 2000 and public hearings were held on December 6, 2000 and January 24, 2001.

The RFI report presents site-wide maps of bedrock geologic units, faults, surficial geologic units, stream courses, storm water drainage systems, and landslides. In addition, the site was divided into module areas for which more detailed geologic maps, geologic cross sections, and hydrauger locations were presented. These maps and cross sections were based on the highly detailed synthesis of geologic data presented in the Converse Consultants 1984 Hill Area Dewatering and Stabilization report (Converse, 1984), and supplemented by additional geologic mapping and subsurface drilling data obtained by Environmental Restoration Program (ERP) scientists during the RFI. The Converse Consultants synthesis included a thorough review and analysis of all known previously existing geologic studies at and

adjacent to LBNL, and presents a detailed geologic map of LBNL and the surrounding regions as Plate 2 of that report.

It should be noted that Plate 3 in the 1984 Converse Consultants report (included as Attachment 8 in the comments) is an historical compilation and is not an illustration of the geologic faults currently known to be present at LBNL. Plate 3 depicts the locations of all previously located geologic faults, including those whose presence was identified based solely on conjecture. As indicated on the note on Plate 3, "Of the faults shown, those interpreted by Converse to exist based on field investigation and a thorough review of existing geologic data are shown on Plate 2 (Geologic Map). A number of faults shown on this map *(Plate 3)* could not be confirmed including the University fault, New fault, Space Sciences fault, and members of the Lawrence Hall of Science fault complex." The lack of evidence for the existence of these geologic faults is discussed in detail in the Converse Consultants report and is summarized in that report as follows:

"Over the past 20 years various investigators have proposed the existence of numerous faults in the study area. Plate 3 shows a compilation of these faults by source. The existence of some of these faults is conjectural, while others exist beyond a doubt. Plate 2 shows those faults which could be verified and for which there is a reasonable basis for assuming the existence of a fault."

LBNL used the verified geologic map, Plate 2 of the Converse Report, as a basis for the geologic maps presented in the RFI and CMS Reports.

Note – Attachment 8 referred in this comment is included as Attachment 17 in the List of Attachments at the end of this document.

COMMENT 16-8

The LBNL Environmental Restoration Program has produced small scale, mostly building specific maps of areas where known activities had resulted in contamination of soil and groundwater. This piecemeal approach to understanding site geology has seriously narrowed the site investigations and discussions about overall impact of the contamination on the Strawberry Creek Watershed. We therefore ask that DTSC:

- Resolve confusion about the location of geologic units and associated faults by locating verifiable bedrock outcrops as the basis for geologic interpretation;
- Provide a common base of geologic information, identify sites of slop instability, especially those associated with groundwater, faults and bedrock contacts;
- Synthesize preexisting surface geologic and geotechnical information for the entire Seismic Creek Watershed.

A unified site-wide approach would provide the necessary information to better assess surface and groundwater pathways of contaminants such that an effective groundwater monitoring and management plan can be developed. This would include stream networks, geology, faults, landslides, all areas of contamination evaluated in the RCRA process, all sewer lines and hydraugers, storm drains and springs, etc.

Response 16-8

The RFI Report divided the site into four area-specific modules to present a more comprehensive integration of the soil and groundwater contamination at the site. Areas were selected for inclusion in each module based on the locations of groundwater plumes, the direction of groundwater flow, and

potential contaminant migration pathways. Maps of groundwater contamination, geology, and hydrogeology were presented for each module area. Also included in each module were several site-wide maps showing geological and drainage features, and the relationship of the module area to the site. Building-specific maps were generally used to illustrate small areas of soil contamination that would have an impact only on localized areas and that could not be depicted on large-scale maps.

There is no confusion regarding the location of geological units and associated faults at LBNL. Extensive geologic mapping has been conducted at LBNL utilizing photogeology, field outcrop mapping, mapping of excavations during building construction, logging of soil borings, and hydrologic testing of groundwater wells as data sources.

Detailed information on areas of slope instability is provided in the RFI Report. Figure 4.2-7 in the RFI Report includes the locations of recent landslide deposits mapped by Harding-Lawson Associates (1982). The RFI Report also contains a landslide hazard map (Figure 4.2-8) showing areas that are considered to have a risk of landslide movement. These areas include both known historical landslide deposits (generally classified as high risk) and areas where landslides have not occurred, but that are known or suspected to be susceptible to landsliding.

Mapping conducted for the Converse Consultants 1984 geologic synthesis and for the RFI provides data that extends a significant distance beyond the LBNL boundaries and is sufficient to address the needs of the corrective action investigations. A synthesis of geologic and geotechnical information for the entire Strawberry Creek watershed would involve mapping of a large area outside the boundary of LBNL. This is beyond the scope of the corrective action investigations at LBNL, and is not necessary to address the characterization and migration potential of contaminated soil and groundwater.

The RFI Report presents a unified site-wide approach to characterization of the site and assessment of surface and groundwater pathways for contaminants. The relevant individual components mentioned in the comment (stream networks, geology, faults, landslides, areas of contamination, hydraugers, storm drains and springs) were considered in this analysis and maps of these features are presented in the RFI Report. All the mentioned features are not compiled on single map, since showing numerous features on one map creates a figure that is crowded, confusing, and difficult to interpret. The locations of sanitary sewer lines are not relevant on a regional basis, but have been considered in the detailed site-specific investigations presented in the RFI Report for cases where they potentially impact contaminant migration.

COMMENT 16-9

EARTHQUAKE DISASTER: POTENTIAL HAZARD LANDSLIDE ZONES. On February 14, 2003 the California State Department of Conservation Geological Survey released the final seismic hazard maps that illustrate the seismic hazard zones of the University of California lands, of Berkeley and Oakland (including LBNL), that encompass areas prone to soil liquefaction (failure of water saturated soil) and earthquake induced landslides.

In spite of the contention of the CMS report, areas of contamination cannot be considered “contained” in earthquake potential hazard landslide zones that appear on the Seismic Hazard maps. Landslides break road, buildings and even borders of containment plumes, cause underground soil erosion, subsidence, lateral spreading and collapse. Disturbed lands allow contaminants to migrate in the soil, soil water, groundwater, storm drains and creeks into residential neighborhoods putting at risk human and ecological health. It appears that the RCRA/CMS reports do not address such a disaster potential predicted in the event of a strong earthquake on the Hayward Fault within the next 30 years by the US geological Survey.

RESPONSE 16-9

The seismic hazard maps referred to in the comment are highly generalized maps showing that there is a potential for landslide-induced earthquakes throughout much of the Oakland/Berkeley Hills. No areas of LBNL are identified on the maps as prone to soil liquefaction. Detailed studies have been conducted to evaluate and mitigate slope stability concerns. The principal synthesis of these studies is presented in a report on the geology of LBNL by Harding and Lawson Associates (Harding and Lawson, 1982). A summary map of landslide hazards derived from these studies, and classified according to risk of failure, is presented in the RFI Report. Only a very small fraction of the areas of contaminated groundwater at LBNL is coincident with areas identified as having potential landslide risks. Even in the unlikely event that landslide slip planes cut deeply enough to intersect the groundwater surface within the groundwater plume areas, seepage rates would be limited by the low groundwater velocities, and seeps could be readily captured and treated.

COMMENT 16-10

Nor does the CMS Report acknowledge the geologic impact on the site contamination as seen in the changes in plume sizes, shapes and movement since 1992 (Attachment 9).

RESPONSE 16-10

Attachment 9 of the comment does not depict changes in plume sizes, shapes and movement since 1992, and is not valid for comparing changes in plume geometry. The Attachment compares the areas where groundwater contamination had been observed in January 1992 to the extent of groundwater contamination that was determined to be present in 1999, after extensive characterization work had been completed as part of the RFI. The figure titled “Areas where groundwater contamination has been observed (January 1992)” was based essentially on information collected from 17 groundwater monitoring wells, and therefore provided an incomplete characterization of the extent of contamination at that time. During the RFI, several hundred additional wells were installed to characterize the magnitude and extent of contamination, with the resultant definition of plume geometry shown on the figure titled “Groundwater Contamination Plumes, Second Quarter FY99” included in Attachment 9.

Both the RFI Report and CMS Report provide extensive analysis of the sizes, shapes, movement, and concentration trends within the LBNL groundwater plumes. Comparing changes in concentrations over time on a well-by-well basis provides a more accurate evaluation of the changes in plume sizes, shapes, and movement, than comparing site-wide maps of groundwater contamination based on different data sets. Groundwater concentration trend graphs for key wells are presented in both reports, and clearly show that essentially all of the LBNL groundwater contaminant plumes have either remained relatively stable, or have diminished in size since monitoring began.

Pleas see Response to Comments 9-2 for more details.

Note – Attachment 9 referred in the comment is included as Attachment 18 in the List of Attachments at the end of this document.

COMMENT 16-11

STRAWBERRY CREEK WATERSHED. The test of the Human Health Risk Assessment (May 2003) fails to acknowledge the historical creek restoration work and laboratory studies that have been carried out on the Upper Canyon reaches of Strawberry Creek, as well as the Campus Strawberry Creek Watershed Management Plan and the entire daylighted portions of Strawberry creek flowing into the San Francisco Bay.

RESPONSE 16-11

Acknowledging the historical creek restoration work and the other items noted in the comment are not within the scope of the Human Health Risk Assessment. Daylighted portions of Strawberry Creek are acknowledged in the Ecological Risk Assessment.

COMMENT 16-12

The Urban Creeks Council, Friends of Strawberry Creek, and countless students work in the waters and along banks to clean up trash and debris, weed infestations of non-native plants, restore banks with native plants, test and GIS the streams on a year round basis. The Incremental Lifetime Cancer Risk (ILCR) theoretical modeling only calculates surface water exposure to a "recreational receptor" of the "residential scenario", without acknowledging those workers involved in creek restoration as receptors too.

RESPONSE 16-12

Although the risk assessment does not specifically refer to the workers involved in creek restoration, any potential risks to those workers would be less than those estimated in the Human Health Risk Assessment for the on-site recreational receptor. In addition, there is currently no risk to creek workers since chemical contaminants are not migrating offsite in surface (creek) water.

COMMENT 16-13

RCRA/CMS reports fails to consider the historical Map of Strawberry Valley and Vicinity Showing the Natural Sources of Water Supply of the University of California by Frank Soule, Jr., Professor of Engineering, 1875 (Attachment 10). Today, 130 years later, several dozen creeks and their tributaries, as reflected on the Soule Map, are well known Mediterranean streams and appear on LBNL's Annual Site Environmental Reports. These include Berkeley Creek, Ten-Inch Creek, Chicken Creek, No-Name Creek, South Fork of Strawberry Creek, Botanical garden Creek, Banana Creek, Pineapple Creek, etc., and close to 30 springs.

RESPONSE 16-13

Both the RFI Report and the CMS Report consider the historical Map of Strawberry Valley and Vicinity. Several features from that map are included and referenced on maps in the RFI and CMS Reports. Most of the creeks mentioned are routinely sampled for contaminants

Note – Attachment 10 referred in the comment is included as Attachment 19 in the list of Attachments at the end of this document.

COMMENT 16-14

The significance of the creeks as conduits for migrating contaminants from soil runoff, seepage from underground plumes etc., such as in the case with Chicken Creek and the tritium groundwater plume, has not been addressed (Attachment 11). There has been no evaluation of the potential health hazards following a seismic event or of the soil liquefaction potential/soil failure within the creek basins that lace the Strawberry Creek Watershed.

RESPONSE 16-14

The potential of creeks to act as conduits for migrating contaminants from soil runoff is discussed in the Draft CMS Report under the subsections titled potential migration of contaminants. Groundwater samples are routinely collected from perimeter wells located along potential migration pathways to site creeks to evaluate the potential for seepage from groundwater to the creeks, and the creeks are routinely sampled for contaminants. The conclusion of these evaluations, as discussed in the RFI and Draft CMS Reports, is that the creeks are not acting as conduits for chemical contaminant migration. DTSC's authority in law does not include investigation of the releases of radionuclides including tritium.

The RFI and Draft CMS Report do evaluate potential seismic hazards. The Alquist-Priolo Earthquake Fault Zone near LBNL is shown on Figure 4.2-6 in the RFI Report. The zone represents an area within approximately 1/8 of a mile of the surface trace of an active fault where surface rupture might be expected to occur during an earthquake. All areas of soil and groundwater contamination are outside this area, except for a small area of soil contamination under Building 88 that has been cleaned up to an unrestricted land use-level. As discussed in response to comment 16-9, earthquake induced landsliding would not have a significant effect on groundwater contamination. No areas of LBNL have been identified on state hazard maps as prone to soil liquefaction. Liquefaction/soil failure within the "basins that lace Strawberry Creek" would result in no health hazard from LBNL contamination.

Note – Attachment 11 referred in the comment is included as Attachment 20 in the List of Attachments at the end of this document.

COMMENT 16-15

WATER QUALITY, GEOLOGY AND SOILS, BIOLOGICAL RESOURCES, HAZARDOUS AND HAZARDOUS MATERIALS AND HYDROLOGY ISSUES WITHIN THE WESTERN HALF OF LBNL. The Bevatron, a decommissioned particle accelerator, is located on a four-acre site in the western portion of LBNL within the Blackberry Creek (a.k.a. the North Fork of Strawberry Creek) Watershed. The site is in the Hayward/East Canyon/Wildcat Canyon Earthquake Fault Zone, surrounded by at least two cross faults: the Cyclotron Fault to the south and the New Fault to the north. Currently the Bevatron and Building 51 are under review for potential demolition. This site central to the CMS cleanup evaluation but many questions have not been answered or information provided about the site.

RESPONSE 16-15

The Bevatron site is not located within any Alquist Priolo Earthquake Fault Zone. Regarding the Bevatron, Building 51 and corrective action investigations in this area, please refer to Response to Comment 16-21. Regarding earthquake faults at LBNL please refer to Response to Comments 16-17 and 16-14.

COMMENT 16-16

The Final CMS Report must include a comprehensive earthquake fault map that would include all the faults in the entire Strawberry Creek Watershed, whether active or not, and an interpretation of the significance of the presences of these faults regarding the transport of surface, soil and groundwater within the LBNL site.

RESPONSE 16-16

A fault map of the entire Strawberry Creek watershed would cover large areas outside the LBNL site and is outside the scope of the CMS. LBNL provided earthquake fault maps in the RFI Report that include faults that could potentially play a role in the migration of contaminants. There is no evidence that any of these faults act as conduits for contaminant migration.

COMMENT 16-17

The Final CMS Report must include a watershed map for the LBNL hill site showing the various watershed and sub-watershed divides with a detail of the Blackberry Creek watershed and the four-acre Bevatron site as well as the Strawberry Creek watershed including the Chicken Creek sub-basin and the East Canyon area above the UC Botanical Garden.

RESPONSE 16-17

Maps showing the boundary between the Blackberry Creek watershed and the Strawberry Canyon watershed (and also showing site creeks and drainage systems) are provided in the module-specific volumes of the RFI Report. This information is provided along with details of the stormwater discharge system to show which offsite creeks (Strawberry or North Fork Strawberry) are the receptors of surface water runoff from the site. The locations of the sub-basins are not relevant to the CMS.

Please see Response to Comment 9-2 for more details.

COMMENT 16-18

The Final CMS Report must include a Seismic Hazard Zone Map which would show areas in the Strawberry and Blackberry Creek Watersheds where previous landslides have occurred, as well as all topographic, geological, geotechnical, and subsurface conditions which indicate a potential for permanent ground displacement.

RESPONSE 16-18

As stated in the Response to Comment 16-8, a map depicting both prior landslides and areas susceptible to future landslides is presented in the RFI Report. This map is based on a synthesis of topographic, geologic, geotechnical, and hydrogeologic data.

Please see Response to Comment 9-2. Also refer to Responses to Comments 16-8 and 16-19 for further discussion of seismic hazards.

COMMENT 16-19

It should be noted that in a 1949 geologist (c. Marliave) report on the bedrock conditions at the Bevatron site "…the area at the Bevatron is to be excavated and leveled off to elevation 710. The bedrock beneath this beveled surface will be comprised of poorly consolidated Orinda sediments…The Orinda Formation absorbs water freely and the lava flows and breccia that are associated with it are also quite pervious so that the whole mass becomes readily saturated… There appears to have been considerable land sliding in the amphitheatre in which the Bevatron is to be located – and during periods of heavy rainfall, the underlying Orinda sediments become quite soft from absorbed water … seeps come out of the ground in many place, there are two known permanent springs in the area where tunnels have been driven into the hillside and pipes leading out from the caved entrances have been flowing water for many years" (Attachment 12).

Further, though landsliding deposits may have been modified or have fill placed over them their subsurface characteristics /failure planes may exert control on groundwater flow patterns and thus on the movement contaminant plumes at the hill site. Mapping of the historical landslide distribution in the Final CMS Report is extremely important for understanding/interpreting how the contaminant plumes may be distributed on the hill.

Response 16-19

Slope stability analyses and extensive engineering of cut-and-fill operations have been an integral part of development of LBNL facilities, particularly large facilities such as the Bevatron. This work has included extensive mapping, drilling, and logging of soil borings, and geotechnical testing of soil samples. Much of these data were used for preparation of geologic maps and cross sections presented in the RFI and CMS reports. The 1949 report by Marliave documents conditions that were present prior to preparation and placement of engineered fill at the Bevatron site, not current conditions.

Geologic maps showing the distribution of historically active landslides and paleolandslides are included in the RFI Report and Appendix I in the CMS Report. The subsurface distribution and hydrogeologic properties of bedrock units and surficial geologic units (including landslide deposits) and the relation of these units to contamination plume locations are discussed in the RFI and CMS Reports, and were a primary consideration in the assessment of the fate and transport of groundwater contaminants and siting of groundwater monitoring wells. Groundwater monitoring wells are located in the downslope area of a number of the slide deposits that intersect contaminated groundwater. Based on the logging of the borings for the wells and the groundwater sampling data, there is no evidence that former landslide slip planes are a preferential pathway for contaminant migration.

Note – Attachment 12 referred in the comment is included as Attachment 21 in the List of Attachments at the end of this document.

COMMENT 16-20

The Final CMS Report must include the current configuration and condition of the engineered drainage around the Bevatron site. How is groundwater from the seeps and springs intercepted and captured? Where are water source diverted? Do creek beds of the historic creek function as conduits for these waters? According to the 1875 F. Soule Map titled: Strawberry Valley and Vicinity Showing the Natural Sources of the Water Supply of the University of California, at least two of the branches of the North Fork of Strawberry Creek were located directly under the Bevatron Complex. The Final CMS Report should provide a historic map of the site showing these watercourses and their current state.

RESPONSE 16-20

Detailed discussion of the engineered drainage around site buildings, including the Bevatron, is outside the scope of the CMS. As indicated in Responses to Comments 9-4 and 16-8, the RFI Report provides site-wide maps showing the principal stormwater drainage systems and stream courses. The stormwater drainage systems connect to various smaller building subdrain systems within the buildings of the Bevatron Complex. Building subdrains that intercept clean groundwater discharge to the storm drain system that drains to the creeks. Building subdrains that intercept contaminated groundwater (including a portion of the Building 51 subdrain system) are routed to on-site groundwater treatment systems. Segments of several creek beds (including part of North Fork Strawberry Creek), were culverted during construction of the facility.

A number of groundwater monitoring wells has been installed in former creek bed locations in several of the historic creeks to evaluate whether they function as conduits for contaminant migration. These include North Fork Strawberry Creek and some of its tributaries and Chicken Creek. At some locations the historic creek beds appear to be preferential flow paths, while at others they do not. Groundwater contaminant flow paths are discussed in the Draft CMS Report.

The RFI Report contains detailed maps of both the original topography and current topography of the Bevatron Complex that illustrate the locations of former drainage courses beneath those buildings. Geologic cross sections in the RFI Report and Appendix I of the CMS Report show the geometry of artificial fill that has been placed in these drainages.

COMMENT 16-21

The Final CMS Report must include a geologic cross section of each plume to show the depth and concentration of groundwater contamination in the four-acre Bevatron site and vicinity. According to the Environmental Checklist's Project Description for the proposed demolition of the Bevatron, soil and groundwater contamination are known to be present in some areas beneath Building 51/Bevatron. The primary known chemicals of concern are chlorinated volatile organic compounds (VOCs) in soil and groundwater. In addition, PCBs have been detected in some groundwater samples. Contamination in soil, outside the plume source areas, has included primarily chlorinated VOCs, petroleum, aromatic hydrocarbons, polycyclic aromatic hydrocarbons, PCBs, and Mercury. Three groundwater plumes converge at the Bevatron site: Building 51/64 VOC plume, Building 7 Freon/VOC plume and the old town VOC/Building 7 Diesel plume.

It appears that the location of the groundwater monitoring wells in the general Bevatron site is insufficient to characterize the full extent of these plumes.

Are the contamination plumes interrelated? It appears that there are no groundwater sampling wells located in the basement of the Bevatron core area. A sampling strategy must be developed and implemented prior to the publication of the Final CMS Report to characterize and comprehensive data on the extent of the potential groundwater contamination plume under the Building 51/Bevatron. Soil boring(s) and testing should be part of this investigation.

RESPONSE 16-21

Geologic cross sections showing depth and contaminant concentrations in each of the groundwater contaminant plumes in the Bevatron site are presented in the RFI Report, with the exception of the Building 51L plume, which was still being characterized at the time. Geologic cross sections illustrating key relationships for the major plume are also presented in Appendix I of the CMS Report, which includes a cross section through the Building 51L plume area.

The number and locations of groundwater monitoring wells are sufficient to characterize the magnitude and extent of the groundwater plumes in the Bevatron area and no additional wells are needed to characterize the extent of the plumes. For each of the plumes in the Bevatron area, groundwater monitoring wells have been installed at the contaminant source location, within the plume bodies, cross-gradient from the plumes, and down-gradient from the plumes, thereby defining the extent of the plumes. In addition, a number of wells have been installed in multilevel clusters to assess the depth distribution of contaminants in key areas of the plumes.

As described in the RFI Report, the three contaminant plumes described in the comment are not interrelated. These plumes are each derived from distinct sources, have distinct chemical compositions, and are not contiguous.

No groundwater monitoring wells have been installed beneath the Bevatron core area because of logistical constraints on installing wells in that area. In addition, no Solid Waste Management Units (SWMUs) or Areas of Concern (AOCs) that might constitute potential sources of contamination have been identified in the core area. Wells down-gradient from the core area do not show results indicative of a source of chemical contaminants in groundwater beneath that area. Therefore, there is no basis for installing wells or collecting soil samples. If there are any indications of contamination beneath the core area when the Bevatron is demolished, additional investigation will be conducted.

COMMENT 16-22

The Final CMS Report must include the potential effects of the increased rainfall on the now pervious site, if the Bevatron structure is removed. What protections will be put in place in the future site design to protect further impact of rainwater on existing groundwater plumes? How will the increased groundwater influence slope stability? In addition to the Bevatron core area, more monitoring wells should be located laterally along the Cyclotron Fault and New Fault because they could act as conduits for the contaminated groundwater.

RESPONSE 16-22

The future use of the Bevatron site has not been determined; however, it is likely that a new building will be constructed on the site and/or the area will be paved. Therefore, the infiltration of rainwater would not increase and there would be no effect on slope stability or on any groundwater plumes, if present. Factors such as slope stability, potential soil and groundwater contamination beneath the building, and the effect on corrective measures proposed for adjacent areas of groundwater contamination would be considered in any redevelopment of the site.

Based on results from the numerous groundwater monitoring wells surrounding the Building 51 complex footprint, there is no evidence for significant groundwater contamination beneath the Bevatron core area. Potential groundwater contamination will be evaluated during demolition and redevelopment of the site, and additional monitoring wells will be installed if necessary. There is no geologic evidence for the presence of the New Fault, which was proposed by Lennert and Associates. The reference to the Cyclotron Fault is not known. If this refers to Great Valley Group/Orinda Formation fault contact, then more monitoring wells are not required, since the fault contact is oriented approximately perpendicular to the groundwater flow direction. Several monitoring wells are located close to this contact near Building 51, and groundwater sampling or water level data from those wells do not show any evidence that the contact acts as a preferential conduit for contaminated groundwater flow. It should be noted that the depiction of geologic faults as conduits for groundwater flow is not correct. Although the ability of earth materials to transmit water can in some cases be higher in fault zones, in many cases faults have little or no effect on flow and the fine-grained materials formed by fault movement often serve to impede flow.

COMMENT 16-23

Additional groundwater monitoring wells are needed (a) west of the northern lobe of the Building 51/64 plume as well as (b) west of the western lobe of Building 71 solvent plume to show whether the two plumes converge into a topographic swale and (c) west of the old town plume, specifically in the area between Building 46 and 51. All of these plumes are in the Blackberry Creek Watershed and drain west toward the city of Berkeley and San Francisco Bay (Attachment 13).

RESPONSE 16-23

There is no technical basis for the additional groundwater monitoring wells suggested. Two groundwater monitoring wells are located down-gradient (west) of the Building 51/64 plume along the former drainage to North Fork Strawberry Creek. Groundwater flow from the "northern lobe" of the Building 51/64 plume would converge on these wells. Contaminants have not been detected in either of these wells and therefore additional monitoring wells are not needed.

Two monitoring wells are located along the former drainage to North Fork Strawberry Creek at the down-gradient edge of the "western lobe" of the Building 71 solvent plume (assumed to refer to the Building 71 Solvent/Freon plume in the vicinity of Buildings 71C through 71K). Concentrations of groundwater contaminants in these wells have either been below the detection limit or well below MCLs for the past 10 years. Groundwater contaminants were generally not detected in a third well that was located in this area. Based on the extensive data available, the Building 51/64 and Building 71 plumes do not converge; however, even if they did converge, there would be no change in the proposed corrective measures.

Several monitoring wells are located between Building 46 and Building 51. Groundwater contaminants have generally not been detected in these wells. In addition, there is a slope stability well SSW19.63 located between Buildings 51 and 46 in the area of potential concern indicated on Attachment 13. SSW19.63 has been sampled approximately annually for VOCs since 1994 to ensure that the Building 46 subdrain adequately captured the down-gradient edge of the Building 52 Lobe. Except for trace concentrations of chloroform (approximately 1 µg/L or less), contaminants have not been detected in this well.

Note that Attachment 13 of the comments does not accurately reflect current geologic conditions at LBNL. The attachment shows "earthquake faults", "historic landslides" and "unsampled areas which could contain contaminated plume(s)" superimposed on a facility map of the known groundwater chemical plumes and the Building 75 tritium plume. The "earthquake faults" shown on the map are primarily those shown on Plate 3 (i.e. compilation of prior work) of the Converse Consultants 1984 geologic synthesis. As described above, the presence of most of these faults was based solely on conjecture; extensive analysis of field data by Converse Consultants indicated that there was no evidence for their existence. The feature labeled "earthquake fault liniation (sic) undetermined interpreted from 1939 photos" is not based on any known field observations. The areas labeled "historic landslides" do not reflect the current distribution of landslide deposits, which is illustrated in Figure 4.2.7 and 4.2.8 of the RFI Report. The "historic landslides" shown on Attachment 13 are apparently derived from studies that predate cut-and-fill operations, slope stability engineering, and most recent geotechnical studies conducted during development of the facility. In addition to the areas addressed in the preceding paragraph, several other "unsampled areas which could contain contaminated plume(s)" are shown on Attachment 13. These areas are either monitored by existing wells that are part of the groundwater sampling program (and are shown on the map), or are located in undeveloped areas of the facility where contaminants would not be present.

Note – Attachment 13 referred in the comment is included as Attachment 22 in the List of Attachments at the end of this document.

COMMENT 16-24

The Final CMS Report must include how the removal of the Bevatron (a concrete plug) and its subterranean structures impact the movement and current hydraulic controls of these groundwater contamination plumes. This factor alone is reason for additional groundwater evaluation and monitoring wells. How is LBNL preparing to prevent any contamination form entering the creeks and ending up in

downtown Berkeley where Strawberry Creek flows day lighted through many public and private properties? For this reason, all site clean-up must be done to residential standards.

RESPONSE 16-24

The removal of the Bevatron is not anticipated to have a significant effect on the movement or current hydraulic controls of groundwater contamination plumes. Chemical concentrations and water levels in numerous wells down-gradient from the Bevatron will be monitored and corrective action will be taken if it is determined that contaminated water might enter the creek.

COMMENT 16-25

The Final CMS Report must include a description of the air monitoring systems LBNL has in place to determine any changes in air quality during the corrective measures process.

RESPONSE 16-25

Air quality impacts are discussed in the CEQA Initial Study/Negative Declaration. No air monitoring is required or planned. However, LBNL will comply with requirements of the Bay Area Air Quality Management District (BAAQMD) during the corrective measures implementation process. Under its CEQA guidelines, the BAAQMD's approach for air quality impacts analysis for construction activities is to emphasize effective and comprehensive dust control measures rather than detailed quantification of emissions. Because corrective measures excavations will be relatively small and located in areas that are paved, only the BAAQMD's "Basic Control Measures," would be implemented.

COMMENT 16-26

The Final CMS Report must include the effects on the potential beneficial uses of Berkeley's large aquifer, e.g., availability in times of drought. Of special concern is the Lennert aquifer, currently pumped by the Shively well #1. The Final CMS Report should provide an update on the pumping rates, water quality, where the water is currently being dumped and why (Attachment 14).

RESPONSE 16-26

The Lennert Aquifer is up-gradient from areas of groundwater contamination at LBNL; and therefore, there is no effect on the potential beneficial uses of this "aquifer" from LBNL groundwater contaminants. The Shively Well #1 is located on University of California property near the southern end of the Space Sciences laboratory parking lot and managed by UC. Discussion of this UC well is not relevant to the soil and groundwater remediation activities proposed in the CMS Report.

Note – Attachment 14 referred to in the comment is included as Attachment 23 in the List of Attachments at the end of document.

COMMENT 16-27

The Final CMS Report must include the potential effects upon the endangered Alameda Whipsnake for which the LBNL site is critical habitat. The Final CMS Report should evaluate the cumulative and significant effects, on the human (and endangered Alameda Whipsnake) environment, with the implementation of the corrective measures that proposes to leave some 80% of the existing

contamination in place, concurrent with the Bevatron demolition, decommissioning and decontamination of the National Tritium Labeling Facility and the construction and operation of the Molecular Foundry.

RESPONSE 16-27

The Alameda Whipsnake, which is a threatened species, is not known to be present at LBNL. The only area at LBNL that has the potential to provide habitat for the Alameda Whipsnake is a stand of north coastal scrub at the southeast corner of LBNL immediately east of the University's Botanical Gardens. This area would not be affected by any of the proposed corrective measures and is well outside any area of soil or groundwater contamination.

Significant and cumulative effects of the project on the environment (human and ecological) were considered in the CEQA Initial Study/Negative Declaration, including cumulative effects from construction of the Molecular Foundry. All impacts identified in the analysis were determined to be less-than-significant. Cumulative effects resulting from Corrective Measures Implementation and the Bevatron/Building 51 demolition project will be considered by LBNL in the cumulative effects section of the draft EIR that LBNL will prepare for the Bevatron/Building 51 Project.

COMMENT 16-28

The Final CMS Report must include a comprehensive description of the various beam targets (including the magnet gap) and the beam dump areas during the Bevatron's forty-year history, and a sampling strategy to determine where the highest concentrations and types of radioactivity and toxic chemicals/solvents are located.

RESPONSE 16-28

Please refer to Response to Comment 1-2 regarding DTSC's authority and radioactivity. Potential soil and groundwater contamination beneath the building will be evaluated after the Bevatron is removed and the area is accessible to investigation.

COMMENT 16-29

The Final CMS Report must include all the stable isotope studies performed at LBNL, in the early 1990s (Attachment 4, page 9.) and in 1998-2000 when LBNL conducted stable isotope studies to characterize the hydrogeology of the site. Further, we ask that stable isotope studies be used as part of the development of the new Groundwater Monitoring and Management Plan.

RESPONSE 16-29

The results of the stable isotope studies would contribute no significant information to the CMS Report. Stable isotope ratios measured in selected LBNL site-wide monitoring wells from 1992 through 1995 are listed and compared in the 1995 Annual Report California Agreement in principal (AIP). The only conclusion relative to groundwater derived by DHS from four years of stable isotope data was that low oxygen-stable-isotope ratios indicate areas where suspected water or sewer line leaks are present. The data provided little information to help characterize the site. To implement a site-wide stable isotope program to monitor for indications of pipe leaks is not within the scope of the CMS. In addition, more direct indications of pipe leaks and the resulting effects on groundwater contamination would be observed in LBNL's routine chemical concentration monitoring and water level measurements.

Stable isotope studies were also conducted from October to December 1995 as part of a tracer test to investigate potential groundwater migration pathways from the Building 7 sump area. The test did not add any new information to characterize the hydrogeology of the site (the treated EBMUD water that was used as a tracer was only detected in the closest well). Additional stable isotope studies were conducted in the late 1990's to assess whether biological degradation of contaminants was occurring naturally in the Building 51/64 Groundwater Solvent Plume.

The Groundwater Monitoring and Management Plan will include: a description of the vertical and lateral extent of groundwater contamination; a listing of the specific wells that will be used to monitor groundwater and analytical requirements; a description of surface water monitoring requirements; and a description of management controls that will be used to reduce potential risks from exposures associated with contaminated groundwater. Stable isotope studies are not required for the development of this plan.

COMMENT 16-30

The Final CMS Report must include in the Statement of Bases regarding compliance that compliance must be determined only after each monitoring well demonstrates measurements lower than MCLs for at least eight (8) consecutive quarters. This would be a change to the current proposal to certify LBNL to be in compliance when multiple data is averaged over four quarters and the average for these wells is below the MCL.

RESPONSE 16-30

Neither the Draft CMS report nor the Statement of Basis proposes averaging multiple well data. The proposal is to consider the corrective measure to be complete when the concentrations of constituents of concern (COCs) averaged over four consecutive quarters of monitoring in each compliance-well at a groundwater unit are lower than media cleanup standards (MCSs).

Four quarters of monitoring are proposed as a sufficient period of monitoring based on a positive evaluation of the following criteria: (a) the plumes are stable; (b) the sources have been removed and/or removal or containment actions have been implemented which would reduce the chemical flux into the plumes; (c) there is more than adequate spatial monitoring of the plumes; (d) parameters affecting the fate and transport of the chemicals of concern (COCs) within the plume have been fully evaluated; and (e) concentrations of COCs in point-of-compliance monitoring wells along the property perimeter are all less than detection limits. Four quarters would be sufficient time to observe any seasonal effects.

COMMENT 16-31

The Final CMS Report must include carefully considered alternative to demolition and removal that would allow the Bevatron and its contamination to remain on site in relative containment. On site containment will allow the radioactivity to decay in place and not be hauled away to impact other communities. This option would save tax payers millions of dollars and save many communities from the serious pollution which the demolition, transportation, and waste dumping would bring about.

The projected cost of 85 million dollars for the Bevatron demolition and removal is truly appalling taking into consideration the enormous initial cost of the construction of the facility in the early 1950s, which was approximately 10 million dollars. Since the 4 acre Bevatron site is part of the current cleanup effort outlined in the Draft CMS Report, we propose that some of those funds be used for DTSC to sponsor a Citizen Watershed Advisory Group. Further, in a June 2, 2003 Bay Guardian article "DOE considers the

pollution serious enough to spend 82.6 million dollars to cleanup LBNL." We should like to have a full public accounting as to how this money has been spent over the last dozen years (Attachment 15).

Response 16-31

Demolition and removal of the Bevatron is neither under the regulatory jurisdiction of DTSC nor within the scope of the CMS.

Note – Attachment 15 referred in the comment is included as Attachment 24 in the List of Attachments at the end of this document.

COMMENT 16-32

The Final CMS Report must include an evaluation of the Chicken Creek tritium and collocated radioactive solvent plumes, as well as the diesel plume in the east canyon above the Botanical garden. Special cleanup strategies must be considered for these areas in addition to a very carefully developed monitoring plan, using stable isotope studies (Attachment 16).

RESPONSE 16-32

The diesel plume is evaluated in the RFI Report. Concentrations of individual chemicals are below MCLs and therefore no additional cleanup under Corrective Measures Implementation (CMI) work phase is required. DTSC's authority in law does not include investigation of the releases of radionuclides, and therefore an evaluation of collocated tritium and chemical contamination in the groundwater is not within the scope of the CMS. However, an evaluation of collocated radiological and chemical contamination was included in the LBNL Summary of Radionuclide Investigation report (September 2003) that is available for review at the Berkeley Public Library. The information contained in that report was updated in LBNL's January 2005 responses to comments from the Water Board regarding the Draft CMS Report. LBNL will be preparing a Groundwater Monitoring and Management Plan for the entire site as part of Corrective Measures Implementation (CMI) work phase. Currently, LBNL is not considering using stable isotopes studies, since stable isotopes are generally used to help with initial site characterization requirements and not for long term monitoring.

Note – Attachment 16 referred in the comment is included as Attachment 25 in the List of Attachments at the end of this document.

COMMENT 16-33

GROUNDWATER PRESERVATION. Our Berkeley city government has communicated to the Regional Water Quality Control Board that the City and citizens of Berkeley strongly oppose the implementation of risk-based clean-up standards, which permit significant amounts of federally generated contamination to remain in place at LBNL that threatens groundwater in the Berkeley/Oakland hills. The City of Berkeley has a history against the use of risk based corrective measures as a first measure of hazardous materials clean-up.

City policy, like that of the state water codes (Porter Cologne Act) contains a significant principle that resources that are deemed to have existing and potential groundwater beneficial uses should be preserved. Similarly, the state water board has a non-degradation policy. This means that the first

consideration for any site clean-up is that it should be brought back to the pristine condition in which it was found.

The City of Berkeley's comment letter to LBNL dated November 26, 2003 states the following "Should DOE reduce its budget for clean-up at LBNL, the facility will not meet any restrictive cleanup goals. Mitigation measures should be expressed as measures required to comply with the most restrictive applicable standards to insure implementation of such requirements regardless of changes in Federal funding for remediation."

Deed restrictions should not be used as a last resort for failure to clean up since they are more clearly associated with Brownfields than they are with a successful clean-up. Brownfields are generally used in depressed areas where the contamination will not be cleaned up due to the absence of a responsible party and/or general economic depression. Berkeley is not depressed economically nor is the federal government. Thus, LBNL/DOE does not require either the use of deed restrictions or Brownfields.

Preservation of the groundwaters of the State of California must be of the highest priority. The Berkeley City Council and its environmental commission support full environmental restoration at LBNL so as to preserve the Berkeley/Oakland hills groundwater for future generations. This is mandatory because in an emergency Berkeley groundwater will be used for domestic, municipal, irrigation and industrial purposes. Today, the LBNL site is contaminated by the presence of large quantities of radionuclides and 162 contaminants including Volatile Organic Compounds (VOCs), Polychlorinated Biphenyls (PCBs), Pesticides, Fuels, Metals and Freon.

RESPONSE 16-33

Please refer to Response to Comment 10-1 regarding the City of Berkeley letter and cleanup goals.

COMMENT 16-34

The official Zoning Map of the city of Berkeley designates the UC hill campus lands including LBNL, as a residential district. This zoning permits, for instance, the construction of resident structures such as apartments and hotels that will provide housing opportunities for transient or seasonal residents. LBNL/DOE must evaluate the cleanup scenarios within the context of actual residential zoning and land use provisions. The city of Oakland's land use designation (S-7 Preservation) for the UC/LBNL hill area is Park, Recreation or Natural area or Watershed (Attachment 17).

Response 16-34

LBNL is being cleaned up to an institutional land use level, which is consistent with the current and reasonably foreseeable potential future land use at LBNL, and the land use designated by both the City of Berkeley and City of Oakland general plan maps. The City of Berkeley Planning and Development Department Zoning Districts and Overlays (January 2005) designates LBNL as zoned R5 (high density residential); however, this is a default designation only used for LBNL and the adjacent UC Berkeley campus, since the City has no jurisdiction for zoning over those lands. The Planning and Development Department's existing Land Use Map and General Plan Land Use Diagram (April 4, 2003) designate LBNL as institutional. Also, the City of Oakland's General Plan and Zoning Map (January 2005) designates LBNL as Institutional.

Note – Attachment 17 referred in the comment is included as Attachment 26 in the List of Attachments at the end of this document.

COMMENT 16-35

COMMUNITY WATERSHED ADVISORY GROUP (CAG) TO OVERSEE ENVIRONMENTAL CLEANUP AT THE LAWRENCE BERKELEY NATIONAL LABORATORY. In addition to the four hundred (400) signatures already submitted at the May 26, 2005 Public Hearing showing considerable community interest in environmental issues related to the LBNL site, we now are submitting over eighty (80) additional signatures on petitions regarding that the State of California Department of Toxic Substances Control (DTSC) sponsor a representative citizen's watershed advisory group to participate in the implementation of the environmental cleanup at the Lawrence Berkeley National Laboratory. This DTSC sponsored advisory group, (CAG) would be involved in the development of the Groundwater Monitoring and Management Plan for the laboratory site, located in the Strawberry Creek Watershed.

DTSC has failed to adequately engage the Berkeley public in the RCRA process and for this reason we request that DTSC support our community's desire for more involvement and grant our request now for a DTSC sponsored CAG.

RESPONSE 16-35

Please refer to Response to Comment 1-8 regarding a Community Advisory Group.

Please refer to the Background, Past Public Participation Activities section regarding DTSC's public outreach on this project.

COMMENT 16-36

IN SUMMARY WE CALL FOR A SOURCE WATER PROTECTION PLAN. For the intent of the Resource Conservation and Recovery Act, we call for a Source Water Protection Plan to conserve and recover the Upper Strawberry Creek Watershed that is still impacted by spreading toxic groundwater plumes. In this regard, we request a comprehensive watershed analysis be conducted, including the drinking water bank, Lennert aquifer, and its groundwater movements feeding Strawberry Creek tributaries for a healthy environmental recovery.

RESPONSE 16-36

The RFI and CMS provided data showing that the groundwater contaminant plumes at LBNL are not currently spreading, but are either stable or retreating. Chemical contaminants from these plumes are not migrating offsite and so pose no threat to surface water or groundwater within the Strawberry Creek Watershed, with the exception of the current groundwater plume areas within the LBNL boundary. Proposed corrective measures described in the CMS Report are expected to reduce the area of the groundwater contaminant plumes and improve the quality of groundwater at LBNL. The Lennert Aquifer is up-gradient from areas of groundwater contamination at LBNL. Therefore, there is no effect on the potential beneficial uses of this "aquifer" from LBNL groundwater contaminants.

COMMENT 16-37

We call for an ECOLOGICAL PROTECTION ZONE in the Strawberry Creek canyon and the Berkeley-Oakland Hills to conserve and protect human and ecological life from further harm in the 21st Century.

RESPONSE 16-37

Based on the findings of the Human Health and Ecological Risk Assessments prepared for this project, there are no anticipated adverse impacts to human health or the environment associated with this

corrective action project in Strawberry Creek Canyon or the Berkeley/Oakland Hills (outside the area of LBNL). Accordingly, an Ecological Protection Zone is not warranted.

COMMENT 16-38

As for the Corrective Measures Study we call for a state-of-the-art assessment of 1) LBNL contamination using GIS mapping data of all the water sources, 2) the earthquake faults from the Hayward Fault Zone to the east Canyon/Wildcat Fault Zone, including, but not limited to the following cross faults the New fault, the University fault, the Cyclotron fault, the Strawberry canyon Fault. We further request that the cumulative environmental impacts of the 174 radioactive and hazardous units be considered as well as the synergistic effects of radionuclides and chemicals and bio-agents (combined) on human and ecological receptors.

RESPONSE 16-38

An extensive geographic information system (GIS) database has been used to locate and manage all environmental sampling and geologic logging data for this project. Potential "water sources" in the vicinity of LBNL contaminant plumes have been identified through testing of site wells to assess which areas of LBNL have sufficient groundwater yield to potentially produce water in quantities sufficient for domestic use. These areas are depicted on maps presented in Appendix I of the CMS Report. Further mapping of "water sources" that are outside areas that might be impacted by groundwater plumes at LBNL is outside the scope of the CMS. As noted in a Response to Comment 16-7 the presence of the "New Fault" and "University Fault" were previously identified by Converse Consultants as conjectural, has not been corroborated by detailed field studies. The reference to the "Cyclotron Fault" is not known, although the fault contact between the Orinda Formation and Great Valley Group to which it might refer is located close to the former 184" Cyclotron Building (currently the Advanced Light Source building) and is included on geologic maps presented in both the RFI and CMS. The Strawberry Canyon Fault is located outside the LBNL boundary, a significant distance down-gradient from LBNL groundwater contaminant plumes and has no relevance to contaminant migration.

Synergistic effects of chemicals and radionuclides are discussed in Response to Comment 1-3. Except for low levels of pesticides, which were detected at only few locations, biohazards are not present in the environment at LBNL. The cumulative effects of the detected pesticides and chemicals on human and ecological receptors were considered in the HHRA and ERA. Cumulative environmental effects from exposure to chemicals at different units were not considered since it would result in an estimate of average risk, which would underestimate the risk at the site.

COMMENTER # 17 LA Wood (letter dated June 7, 2005)

COMMENT 17-1

At the workshop portion of the May 26, 2005 Public Hearing regarding the proposed soil and groundwater cleanup plans at the Lawrence Berkeley National Laboratory there were many good questions asked by members of the community who were not able to stay for the Public Hearing portion held later that night.

During the discussions Berkeley Councilmember Worthington had several questions but also stated that he would not be around for the Public Hearing. You indicated that his questions would be referred to the process. In fairness to others, I have included a CD of the "Questions & Answers" period. I also request that all questions asked during this workshop portion of the meeting be considered as part of the Public Hearing record. I also ask that DTSC have this audio recording transcribed so community questions can be responded by DTSC.

I will be happy to provide the names of all those from the community who asked questions on the CD.

RESPONSE 17-1

DTSC informed the audience at the public hearing on May 26, 2005 that the question/answer session will not be recorded and will not be considered as formal comments to be responded to in the Response to Comments document. All comments needed to be submitted during the public hearing when the court reporter was present and designated by DTSC to formally record oral testimony. Therefore, the compact disk with the recording of all questions asked during the public workshop portion are not included as part of the public hearing record.

ATTACHMENTS

Attachment 1 - Letter to DTSC June 20, 2003 from Jim Cunningham et al

Attachment 2 - Petition - Friends of Strawberry Creek Watershed 6-07-05

Attachment 3 - Letter from Phil Kamlarz - City of Berkeley May 26, 2005

Attachment 4 - Letter from EBMUD - William Kirkpatrick May 16, 2005

Attachment 5 - Letter from Andrea Pflaumer June 7, 2005

Attachment 6 - Letter from Department of Transportation - Sable June 7, 2005

Attachment 7 - Letter from D Thompson and KJ Sharp June 8, 2005

Attachment 8 - Letter from Bill Walzer May 28, 2005

Attachment 9 - Letter from Pamela Sihvola and LA Wood June 7, 2005

Attachment 10 - Attachment 1 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 11 - Attachment 2 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 12 - Attachment 3 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 13 - Attachment 4 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 14 - Attachment 5 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 15 - Attachment 6 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 16 - Attachment 7 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 17 - Attachment 8 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 18 - Attachment 9 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 19 - Attachment 10 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 20 - Attachment 11 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 21 - Attachment 12 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 22 - Attachment 13 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 23 - Attachment 14 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 24 - Attachment 15 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 25 - Attachment 16 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 26 - Attachment 17 of Pamela Sihvola and LA Wood letter June 7, 2005

Attachment 27 - Attachment A of Pamela Sihvola letter - Nov 19, 2004 letter to DTSC

Attachment 28 - Attachment B of Pamela Sihvola letter - October 5, 2004 COB letter to DTSC

Attachment 29 - Attachment C of Pamela Sihvola letter - May 15, 2005 letter CHC to Mayor

Attachment 30 - Letter from LA Wood June 7, 2005.pdf